AMERICAN AGRICULTURIST

FOR THE

Farm, Garden, and Household.

"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

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Calendar for the Month.

Day of Month.	Day of Week.	Boston, N'England, N. York State, Michigan, Wisconsin, Iowa, and Oregon. Sun rises.	Sun sets.	Mo'n sets.	N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois. Sun rises.	Sun sets.	Mo'n sets.	Washington, Maryland, Virginia, Kentucky, Missouri, and California. Sun rises.	Sun sets.	Mo'n sets.
		H. M	H. M	H. M.	H. M	H. M	H. M.	H. M	H. M	H. M.
1	S	7 19	4 29	morn	7 5	4 33	morn	7 0	4 39	morn
2	M	7 11	4 28	0 8	7 6	4 33	0 9	7 1	4 38	0 10
3	T	7 12	4 28	1 8	7 7	4 33	1 8	7 2	4 38	1 8
4	W	7 13	4 28	2 8	7 8	4 33	2 8	7 3	4 38	2 6
5	T	7 14	4 28	3 10	7 9	4 33	3 8	7 4	4 38	3 5
6	F	7 15	4 27	4 13	7 10	4 33	4 9	7 5	4 38	4 6
7	S	7 16	4 27	5 17	7 11	4 33	5 12	7 6	4 38	5 7
8	S	7 17	4 27	6 20	7 12	4 33	6 14	7 7	4 38	6 9
9	M	7 18	4 27	rises	7 13	4 33	rises	7 7	4 38	rises
10	T	7 19	4 27	5 3	7 14	4 33	5 10	7 8	4 38	5 17
11	W	7 20	4 27	6 8	7 14	4 33	6 14	7 9	4 38	6 21
12	T	7 20	4 28	7 17	7 15	4 33	7 22	7 10	4 38	7 28
13	F	7 21	4 28	8 30	7 16	4 33	8 34	7 10	4 38	8 38
14	S	7 22	4 28	9 42	7 17	4 33	9 44	7 11	4 39	9 47
15	S	7 23	4 28	10 53	7 17	4 34	10 54	7 12	4 39	10 56
16	M	7 24	4 29	morn	7 18	4 34	morn	7 13	4 39	morn
17	T	7 24	4 29	0 6	7 19	4 34	0 6	7 13	4 40	0 5
18	W	7 25	4 29	1 19	7 19	4 35	1 18	7 14	4 40	1 16
19	T	7 25	4 30	2 33	7 20	4 35	2 31	7 14	4 40	2 29
20	F	7 26	4 30	3 52	7 20	4 35	3 48	7 15	4 41	3 44
21	S	7 26	4 30	5 10	7 21	4 36	5 5	7 15	4 41	4 59
22	S	7 27	4 31	6 23	7 21	4 36	6 17	7 16	4 42	6 11
23	M	7 27	4 32	sets	7 22	4 37	sets	7 16	4 42	sets
24	T	7 28	4 32	5 21	7 22	4 38	5 27	7 17	4 43	5 34
25	W	7 28	4 33	6 35	7 23	4 38	6 40	7 17	4 44	6 46
26	T	7 29	4 33	7 43	7 23	4 39	7 47	7 18	4 44	7 51
27	F	7 29	4 34	8 50	7 23	4 39	8 53	7 18	4 45	8 55
28	S	7 29	4 35	9 54	7 24	4 40	9 55	7 18	4 46	9 57
29	S	7 29	4 35	10 56	7 24	4 41	10 56	7 19	4 46	10 56
30	M	7 30	4 36	11 57	7 24	4 42	11 56	7 19	4 47	11 55
31	T	7 30	4 37	12 57	7 24	4 43	12 55	7 19	4 48	12 52

PHASES OF THE MOON.

MOON.	D.	BOSTON. H. M.	N. YORK. H. M.	WASH'N. H. M.	CHA'STON H. M.	CHICAGO. H. M.
1st Quart	1	11 53 mo.	11 41 mo.	11 29 mo	11 17 mo.	10 47 mo.
Full M'n	9	3 6 ev.	2 54 ev.	2 42 ev.	2 30 ev.	2 0 ev.
3d Quart.	16	10 20 ev.	10 8 ev.	9 56 ev.	9 44 ev.	9 14 ev.
New M'n	23	4 40 ev.	4 28 ev.	4 16 ev.	4 04 ev.	3 34 ev.
1st Quart	31	9 13 mo.	9 1 mo.	8 49 mo	8 37 mo.	8 7 mo

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For *One* or *Two* Subscriptions, *One Year*, the price will hereafter be (post-free) **$1.50** each, instead of $1.60.

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Will Our Friends

PLEASE OBLIGE US

TO-DAY?

[When subscription letters arrive, one of the Proprietors opens them, carefully examines the enclosures, marks on each the amount enclosed, *numbers* each letter, puts the same *number* upon the checks, money orders, or other documents, and files the letter. Our most experienced careful clerks afterward examine the letters thoroughly, see exactly what is desired, enter the names in the Register for the day, with the letter number against each, the amount paid, the time paid for, each sender's name, gives him credit in another book for any names designed for a premium, etc., etc., and these letters are then filed away by number for reference, years after if need be. The Register Book of to-day (there is one for each week day) is on the next day taken by another clerk, who distributes the names through the State Mail Books, where they are arranged under the several Post Offices, and these are Indexed Alphabetically. Other clerks take these mail books and write wrappers for mailing the papers. Sundry checks are provided for ascertaining that every name and the amount paid, the time, etc., shall be entered. When we know a subscriber's P. O. and State, it is at once found from the Alphabetical Index, and then traced by page numbers, and letter numbers, to the Register Book, and, if necessary, to the original letter. When wrappers are written they are counted for each P. O. and called over and checked, to prevent any omissions. If any papers are lost, it is during transmission or delivery in the mail. All this system is convenient, even necessary to prevent any errors.]

NOW THEN,

the above indicates the amount of work required to enter 80,000 to 100,000 names, and get the papers on the way all right and *promptly;* and why we desire to have the work done by experienced, tried clerks, without the aid of extra men about Jan. 1st. It will **Oblige us Greatly** if as many as possible of our Readers will *to-day* (that is, when this paper comes to hand), send in their own renewals, and the names of the new friends who will come with them to enjoy, and be profited, we trust, by what we shall set before them during the coming year. Our plans are large; we are sure that these pages will give many items of information which it will *pay* every reader to have.

N. B.—At the bottom of page 488 will be found a convenient form for use in remitting subscriptions. It can be cut off without marring the rest of the paper, and will save the trouble of writing a formal letter. Our printing paper is sized and calendered the same as writing paper, so that it will carry ink writing.

The Holidays are Coming, and a good many can cheaply obtain fine articles, to surprise their friends with, by collecting a few names of subscribers, and forwarding them in ample time to have the premium article on hand before Christmas or New Year's. The earlier it is done now, the better, before the rush upon manufacturers and dealers, and the crowd upon the express and freight lines, may chance to cause any vexatious delays.

Pleasant Announcement.

A Magnificent Steel Plate, Line ENGRAVING,

MARSHALL'S GREAT WORK, THE

Farmer's Pride,

For Every Subscriber to American Agriculturist for 1879.

Fine Pictures add greatly to the attractiveness and cheerfulness of every home, however lowly it may be. **More than 250,000 excellent Chromos,** almost equal to Oil Paintings, such as the "Strawberry Girl," "Mischief Brewing," etc., now adorn the dwellings of the readers of the *American Agriculturist*, to whom they were sent exclusively. These are vastly superior to the cheap, dauby pictures subsequently scattered through the country, and which led us to cease distributing Chromos altogether.

We are happy to announce, however, that we have now completed arrangements for supplying all the *bona-fide* subscribers of the *American Agriculturist* for 1879 with Marshall's *Superb Steel Plate, Line Engraving*, entitled "THE FARMER'S PRIDE." Mr. Marshall's great portraits of Washington, Lincoln, and others, have achieved for him A WORLD WIDE REPUTATION.

The eminent French artist, Gustave Doré, styles him "the Master of Art in America," and European critics have united in pronouncing his portrait of Mr. Lincoln the **finest specimen of lineal art produced in this century.** Mr. Marshall regards this last work, "The Farmer's Pride," **equal to any of his previous efforts,** and it will unquestionably be so regarded by judges. The cost for engraving a steel plate ranges from One Hundred Dollars upward, according to the artistic execution, fineness, and size. Mr. Marshall receives

Three Thousand Dollars

for engraving *this* picture, which of itself indicates the excellence and value of the work.

The usual price of steel-plate line engravings of the size and character of "The Farmer's Pride," **is Ten Dollars.** To other than subscribers, we will supply the picture, postage prepaid, **for Five Dollars.** To all *bona-fide* subscribers of the *American Agriculturist* for 1879, however, we **will supply the picture at our office, together with the Paper, one year, post-paid, for $1.63,** or $1.70 when the picture is forwarded by mail, securely rolled and protected in a mailing-tube, free of any extra charge.

That is to say, we will send the *American Agriculturist* for 1879 to *bona-fide* subscribers, together with Marshall's elegant Steel Plate, Line Engraving, "The Farmer's Pride" (price $5.00), for $1.70, all postage prepaid. **OR,**

When the engraving is delivered at our office, 245 Broadway, we will furnish the paper and the engraving for $1.63, postage for the year prepaid on the paper. We make this

EXTRAORDINARY OFFER,

because of our desire to place this beautiful picture in the homes of all our subscribers, and at the same time to increase the number of these subscribers for 1879 to a round

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Though the *American Agriculturist* at the reduced price ($1.50 per annum), is cheaper than any similar journal in the world, and richly worth treble the price of the subscription, we cheerfully supply this magnificent engraving **at a great expense to ourselves,** believing that we shall be recompensed for so doing in the satisfaction afforded, and in the increased interest and efforts for the paper, of those subscribers who share in the distribution.

"THE FARMER'S PRIDE"

is executed in the **highest style of art on fine plate-paper,** *Twenty-Two* Inches by *Twenty-Eight* Inches. Some idea of the estimation in which the artist and the picture are held, may be had from the fact that thirty artist proofs of the engraving we offer, with the signature of the Artist, have been subscribed for at **Twenty-five Dollars each.**

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The *American Agriculturist* for 1879 postage prepaid,(14c. extra in New York City).**$1.50**

"The FARMER'S PRIDE" to other than Subscribers (postage prepaid).....**$5.00**

The *American Agriculturist* and "THE FARMER'S PRIDE" to one address, (postage prepaid on both).....**$1.70**

The two, when the picture is delivered at our office, 245 Broadway,.....**$1.63**

No person other than a Subscriber can procure this picture at less than $5.00. It is now on exhibition at the reception rooms of the *American Agriculturist*, 245 Broadway.

The Engravings will be issued as rapidly as possible, and subscribers will be supplied in the order of their application.

The Steel-Plate to Subscribers in Clubs.

To accommodate our subscribers who have already sent in their names in clubs, at club rates, and those who may hereafter do so, we subjoin the following offers:

Four Subscribers for 1879, and *Four* Engravings, all *post-paid*, for..... $5.80

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Ten Subscribers for 1879, and *Ten* Engravings, all *post-paid*, for..... 12.00

To Clubs of *Ten* Subscribers, post-paid, and *Ten* Engravings taken at the Office, or forwarded by Express in one package, expressage unpaid.....$11.20

Clubs *above Ten* at the same proportionate rates.

The Steel-Plate Engravings for Premium Clubs.—The above offer of Engravings will in no way interfere with the General Premium List, but *all* subscribers, from whatever source received, will have equal privileges. For particulars, see page 481.

A NEW PREMIUM—Or a Pocket Revolver, Cheap.—So many write us for good, low-priced revolvers, that we have arranged to supply those who specially want them, thus: 1st—A very good, steel-barrel and lock, *nickel-plated*, 7-shooter **Revolver,** Calibre 22-100. Made at the celebrated Remington Arms Works, weight 7 ounces. It is as good as any made for anything like the money, and good enough for anybody who wants such an implement. We have just fired one 100 times, and found it work very well. It will be sent free to any part of the United States, post-paid, by mail, to any one sending only 5 subscribers to the *American Agriculturist*, at $1.50 a year, or 10 subscribers at the 4-club rate of $1.25 a year. [Or it will be delivered free as above, on receipt of $2.50. It is as good for use as any $5 or $10 revolver of like calibre.] 2d.—A larger 5-shooter Revolver, nickel-plated, calibre 32-100, weight 11 ounces will be presented for 7 subscribers, at $1.50 each, or 12 at $1.25 each, delivered free, as above. [Or it will be forwarded free, as above, on receipt of $4.]

A PREMIUM AVAILABLE to Nearly Every Subscriber.

Except in some small places, where nearly everybody already takes this paper, there are very few of our readers who do not *each* know at least two others who would be profited by the perusal of such a paper, and who would take it if its merits were explained to them. The Table, page 481, names 20 desirable articles, one of which will be presented to any one sending his own and two other subscriptions at $1.50 each a year. It is very easy for a multitude of people to each make up a larger list and get a more costly Premium. The articles are described and illustrated in the November number. A separate Illustrated Descriptive Sheet will be sent to any one desiring it.

An Important Enterprise Proposed.

The Best Possible Investment of a small sum that can be made by the farmers of any neighborhood, is to secure a few good books, and pass them around from one to another during this and the next three months, until all have read them. We firmly believe that $10 to $20 thus invested, *amounting to but a trifle each, if a considerable number unite*, will, in the end, be worth many hundreds, if not thousands of dollars, to that neighborhood. It only needs some public-spirited man, young or old, to take hold as a leader in the enterprise, and it will be quickly consummated.—Better still, to unite in forming a club of subscribers large enough to secure a number of volumes *free*. Thus: Fifteen persons clubbing together and paying only $1.50 apiece, will not only each have the *American Agriculturist* post-paid for a year, but they will *also* receive, delivered free, **$10.00** worth of good books, which *all* can read in turn. Twenty persons get **$15.00** worth of books; Twenty-six persons thus uniting, will get **$20.00** worth of books, or quite a library. ☞ By this arrangement, *each* member of the club will, by the payment of $1.50, not only have the paper all the year, but a *joint ownership* in $20.00 worth of valuable books, and a perpetual right to use them. One of the club may be appointed as keeper, or librarian, to take charge of the books, and give them out as desired. *There ought to be 50,000 such library clubs in as many different neighborhoods, this very winter, this month even.* Who will be the first enterprising, public-spirited man in each place to start such an enterprise?—Here are some

BOOKS TO SELECT FROM.—These may be of many kinds for the above. We suggest the following as making up a good assortment to start with: Allen's New American Farm Book, $2.50; Barry's Fruit Garden, $2.50; Henderson's Gardening for Profit, $1.50; Stewart's Irrigation, $1.50; Thomas' Farm Implements, 1.50; Tim. Bunkers Papers, or Yankee Farming, $1.50; Johnson's Winter Greeneries at Home, $1.00; Dadd's American Reformed Horse Book, $2.50, or, Dadd's Horse Doctor, $1.50; Herbert's Hints to Horse-Keeper's, $1.75; The Percheron Horse, $1.00; Coburn's Swine Husbandry, $1.75; Harris on the Pig, $1.50; Dadd's Cattle Doctor, $1.50; Stewart's Shepherd's Manual, $1.50; Wright's Practical Poultry-Keeper, $2.00; Reed's House-Plans for Everybody, $1.50; Harris's Talks on Manures, $1.50; Quinby's Mysteries of Bee-Keeping, $1.50. All the above books would cost only $30.00, if purchased, or nothing but a little effort, if obtained by a club; but any portion of them can be used in the start, and there are many others that may be preferred for a particular purpose in any locality.

A "Baker's Dozen" for 10 Days.—To all new subscribers for 1879, received prior to December 10, we will send this number without extra charge; this is 13 months for the price of 12.

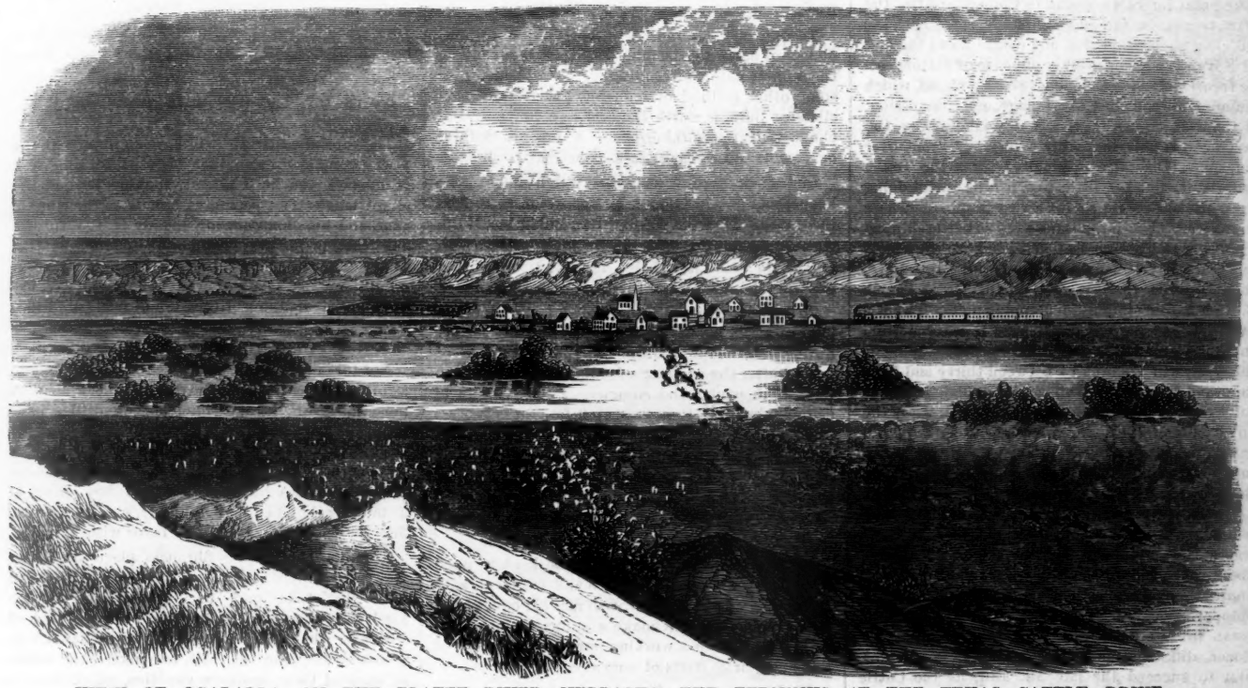
Clubs can at any time be increased by remitting for each addition, the price paid by the original members: or a small club may be made a larger one at reduced rates, thus: One having sent 6 subscribers and $7, may afterwards send 4 names more and $3, making 10 subscribers for $10.00; and so for the various other club rates.

American AGRICULTURIST.
NEW YORK, DECEMBER, 1878.

The Texas Cattle Drive.

Ogalalla, Nebraska, the terminus of the Texas Cattle Drive, is located on the Union Pacific Railroad, 342 miles west of Omaha. The place has figured considerably in the newspapers during the autumn, as being the point where the Cheyenne Indians (escaping from the reservation in the Indian Territory) crossed the South Platte River and ultimately secured their freedom. The first house at Ogalalla was built in 1870, and though there are now not more than twenty buildings, all told, the place, during the cattle season, is full of bustle and excitement. The first drove of cattle from Texas reached here in 1874. Prior to that time they were driven to Fort Kearney, 154 miles further east on the Union Pacific Railroad. As the country around Kearney became settled, a new terminus had to be selected, and Ogalalla was decided upon because of its geographical advantages. The cattle could no longer be driven to any point eastward without encountering improved lands, and it was not feasible to drive them to any point west of Ogalalla, owing to the difficulty they would experience in procuring water en route. Between Ogalalla and Buffalo Station, on the Kansas and Pacific Road, from which point the cattle drive leads northward, there are nearly a dozen streams or rivers about far enough apart to make convenient watering stations for the cattle. These streams embrace the Saline, South Fork of the Solomon, Prairie-dog, South Sappa, North Sappa, Beaver Creek, Driftwood, Republican, Frenchman, and the White Men's Fork. The distance between these rivers is about twelve miles, which is a fair day's drive, but the distance from the last river to Ogalalla, on the Platte, is about thirty miles. On account of absence of water between the latter points, the drive is generally made in the cool of the day, or in the night-time, the cattle being watered at the last moment before they are started on this long drive to the South Platte. The whole distance from Buffalo Station to Ogalalla is 145 miles, and about twelve days are usually consumed in making it. The cattle brought from the southern portion of Texas, travel some seventeen hundred miles, and those from the northern part of that State, about thirteen hundred miles. It takes an even five months to make the journey from the southern part of Texas, and from three and one-half to four months for that from the northern part of the State. There have been cases of forced driving, where the cattle have come through in ninety days. A forced drive is made when the owner of the herd finds a better market at Ogalalla than he anticipated, and sells more cattle than he has ordered to come up; in such a case he orders, through his agent in Northern Texas, a fresh lot to come on as quickly as possible. The proprietors or principals generally buy the cattle in Texas on time, paying from $3.00 to $4.00 a head, down; they receive cash for them at Ogalalla, and settle up with the original owners when they return to Texas. They purchase in Texas a cow, for example, for $8.00, and the calf is thrown in; the animals are kept on pasture lands, at little or no expense, until spring, when the herd is made up for the north. Upon reaching Ogalalla the cow brings $12.00 and the calf from $7.00 to $8.00. Owners rarely accompany their stock, but reach Ogalalla by railroad several weeks before the cattle arrive, in order to make bargains, etc. Thus the owners frequently have their herds sold before their arrival.

The herds leave Texas in the early part of February, generally numbering from one thousand to thirty-five hundred head of cattle, and requiring from eight to ten men to manage them. These herders receive $30.00 a month, and also $50.00 extra upon reaching Ogalalla to defray their expenses back to Texas. There is a head herder, who exercises authority over the others, and who is universally known as the "Corporell." Mess wagons for the herders are fitted out by the proprietors. They generally take with them from thirty to forty horses, to meet the wants of the long drive, and often purchase or trade for others on speculation *en route*, to be sold at an advance at Ogalalla. *All* the horses are sold when the cattle are delivered at the end of the drive. As fast as the owner disposes of the cattle, and the cow-boys can be spared, he pays them off, when they at once proceed to indulge in what they term "a little amusement." The sharpers and gamblers who have reached Ogalalla from various points, are always ready to accommodate the cow-boys in their search for "amusement," and they are fortunate if they do not leave a considerable portion of their wages with the Spanish Monte and Faro dealers. It very frequently happens that they do not have enough money left to pay their way back to Texas by cars, and are therefore compelled to mortgage their next season's wages! After reaching the extended valley of the Platte, opposite Ogalalla, the cattle, while waiting to be sold and delivered on the north bank of the river, graze up and down the south side of the Platte over an area forty miles long and from one and a half to four miles wide. At one time this year (July 21st) there were fifty-five thousand head of cattle grazing in this valley. There is a space left between the herds a quarter of a mile or more wide, which the cow-boys utilize for camping purposes, they remaining on this side of the Platte until the cattle are sold. Calves born on *the road* are invariably shot, and mothers are generally roped with steers or cows that have not calved, for if this were not done they would manage to slip away in the night and return to the spot where their offspring were shot. Buyers who live a long distance away, shoot the calves born *at Ogalalla*, as they do not care to drive them over the long distance to their ranches.



VIEW OF OGALALLA, ON THE PLATTE RIVER, NEBRASKA, THE TERMINUS OF THE TEXAS CATTLE DRIVE.

The herders go to the river for water at noon, with the exception of a few which remain behind to take care of the calves. One cow may often be seen watching twelve or fifteen calves, while their mothers have gone with the remainder of the herd to drink. After the return of the herd the "watchers" take their turn. This interesting fact is vouched for by several old ranchmen.

In 1874, the first year that Ogalalla was made the terminus of the drive, fifty thousand head of cattle reached here. Last year, 1877, eighty thousand arrived. The number of cattle brought here this year and distributed to the ranchmen, is computed at one hundred and twenty thousand. The herds begin to come in about the first of May, and continue to arrive until September. During the present season, the cash prices here have been about as follows: Yearling heifers, $8; yearling steers, $9; two-year old heifers, $11; two-year old steers, $13; cows, $12; three-year old steers, $16; beeves, $19 to $20.

After the ranchmen have kept the cattle on their northern ranges for a year or more, they ship them to the Chicago market and make *their* profit on them. The principal cattlemen engaged in the Texas cattle drive are: Ellison & Deweese, D. R. Fant, Seth Mabry, Captain Littlefield, Millett Bros., and W. G. Butler. There are smaller dealers, making together about twenty-five. Mr. Ellison, who

remains at Ogalalla much of the time, has been the principal dealer or "middle-man," as the bulk of the trade has passed through his hands. The ranchmen have obtained from him any kind of cattle they have desired, and he in turn has purchased of the other dealers, so that the latter may be said to have done their business through him. Major Mabry has likewise done a good deal of business of this kind. There is another Texas drive, that to Fort Dodge on the Atchison, Topeka, and Santa Fe R. R., several hundred miles south of here. Of course it would be a great saving of distance and expense if the proprietors could stop at Fort Dodge, rather than bring their cattle on up to Ogalalla. But they can not find so ready a market for them at Fort Dodge as at Ogalalla, which is easily accessible to the owners of the great cattle ranches in Wyoming, Nebraska, Colorado, etc. It is computed that about seventy thousand cattle were driven to Fort Dodge the present year, and of this number, some twenty thousand remained unsold, and were brought on up to Ogalalla, where they found purchasers. Ogalalla, in addition to being the terminus of the Texas cattle drive, is likewise a shipping point for cattle going to Chicago. After the drive terminates (about the first of September), the shipping business begins, and continues to the first of November. The average expense of getting cattle from Ogalalla to Chicago is $7.00 per head, which includes railroad charges, yardage, and commission. If the Chicago market is any way satisfactory, the ranchman is able to realize a very fair profit over and above the rice originally paid to the Texan proprietor, and the little expense of maintaining the cattle on his ranch for a year or more. There were about thirteen thousand head of cattle shipped from here to Chicago last year, and the shipments this year will reach eighteen thousand. Julesburg, about 35 miles further west, on the Union Pacific R. R., is another important shipping point. Twenty-two thousand head of cattle were forwarded from there last year. It is computed that the shipments this year will amount to between thirty and forty thousand head. The Iliff Estate, which has been run by contract since the death of Mr. Iliff, by the Snyder Bros., will alone ship over fourteen thousand from Julesburg this year. Some idea of the magnitude of the Iliff shipments may be obtained from the fact that the estate forwards three train loads per week of twenty cars each, and fourteen weeks will be required to complete the shipments. There was a large shipment this year from Cheyenne, about 13 miles west of Julesburg, which is also another important shipping point. The largest shippers this year from Cheyenne have been the Swan Bros., who own in the neighborhood of a dozen different ranches, and who, it is thought, aim to succeed the late Mr. Iliff, as the Cattle Kings of the North West.

Hints for Work.

[*The Hints and Suggestions in these columns are never copied from previous years, but are freshly prepared for every month, from the latest experience and observations, by practical men in each department.*]

There is more room for thought in the business of farming now, than ever before. There is more money employed in the business, more machinery is used, and a greater diversity, and a better quality of product is demanded by the consumer.

Plans for management may be discussed in the family, and in gatherings of neighbors. By talking over such matters, and getting the ideas of people of experience, the best, most convenient, and most profitable methods are often found.

Feeding Stock.—Economy and effectiveness, are the main points to observe. The best food, fed in the best way to the best stock, must be the most profitable, and to reach this conclusion is more a matter of care and skill, than of money. Money can procure food, stock, good buildings, and labor; but good management always depends on the intelligent application of known facts to practice.

Making Manure is next in importance to feeding stock. This subject is worthy of careful study, and every farmer may look to Joseph Harris' new book "Talks on Manures," for many valuable ideas. He will find gathered in it not only the author's practical knowledge, but the pith of most that has been learned and printed on the subject.

Saving Fodder.—There are many fields still dotted with shocks of corn fodder. This season it ripened very thoroughly, and needed but little drying to cure it. It may be safely stacked or stored in barracks this year with less precaution than usual, but to prevent further waste, the stover should be taken care of as soon as possible.

Roots yet unharvested, should be taken up at once, before the frozen ground prevents. Pits not fully protected, should now be made safe by an extra coating of straw and earth. With a foot of straw, 3 inches of earth will be sufficient.

Cabbages are coming into common use as fodder. They may be saved by pitting them in heaps of two or three wagon loads, with sheaves of straw intermingled, and covering with straw and earth, as for roots; or by placing them, roots upturned, upon the ground, in a dry place, and throwing a few inches of earth over the heads. We find that cabbages make excellent food for milking cows.

Turnips may be fed to milking cows, without danger of flavoring the milk disagreeably, by giving them immediately after milking. A root cutter, or some other method of reducing the roots to thin slices or pulp, is worth the cost as a preventive of choking, if for nothing else. A few cut turnips or carrots occasionally are beneficial to horses.

Live Stock require constant watchfulness. To keep them comfortable is as important as to feed them well. No animal will thrive and fatten, if unclean and cold, hence uncomfortable and fretful.

Warmth saves feed, helps fattening, and often prevents sickness, if not the total loss of an animal.

To keep the Animals in good condition, or increasing in weight, should be the object of every farmer during the winter season. To permit a loss of weight after the summer's feeding, is to waste the food both winter and summer. It costs more to get an animal fat, than to keep it fat.

Young Animals require particular care; this is the making of the adult animal. To over feed is as unwise as to stint food. Costiveness is perhaps the most to be guarded against at this season; linseed oil-cake meal is a good and cheap preventive. One pint to one quart daily may be given.

Horses at regular work, should be kept in good condition. Two quarts of corn and oat meal, added to a bushel of cut straw, will make it equal to so much hay. This will make a sufficient ration for an idle horse; for a working horse, add 3 quarts of this meal, or 3 quarts of oats at each feed.

Working Oxen are often more useful than horses, and of late have been too much neglected. It should not be forgotten that oxen require more time to feed than horses, and ample opportunity for rumination should be given. During winter, oxen that work upon the road ought to be shod. The cost will be saved in the extra work done, and freedom from injury by slipping.

Young Steers less than a year old, may be broken to the yoke by any patient boy. At first they should be yoked and tied up until they have become used to the yoke, when they may be led around and taught to drive. This is interesting play-work for a farmer's boy in winter.

Sheep.—A run on the stubbles is healthful exercise. A small plot of rape for green feed is always acceptable to the sheep, until the snow is too deep for them to reach it. See that they have plenty of pure fresh water, at least twice a day.

Cows will begin to fall in milk as the weather becomes cold, unless the food is of the best kind. Mangels or sugar beets, pulped and mixed with cut hay, corn stalks, or even straw, and left 24 hours to ferment, are productive of milk; and 2 quarts of corn meal, added to a bushel of this, will greatly help the yield of cream. Brewer's grains in small quantities, are a good food for milk production.

Fattening Animals should be pushed on as rapidly as possible. No fresh food should be given until the refuse of the previous feeding is cleared from the troughs. When the appetite fails from any cause, a change of food will often restore it.

Plowing of heavy soils may be done to advantage until the ground freezes. It is well to plow under stable manure on such land. Light soils are quite as well if plowed in spring.

Wheat and Rye fields should be freed from surface water, and open drains cleared of leaves and rubbish. Top-dressing with fertilizers or manure, where necessary, should be done without delay.

Sundry matters.—The ice house should be cleaned out and prepared for ice, and a stock of sawdust be procured for packing....The clearing of swamps may be done better a little later; tussocks cut easier when frozen....Swamp muck for use as an absorbent may be dug now, and left to freeze dry ready for use in a few weeks....Roots in cellars should be overhauled occasionally, and decayed ones removed. Cellar windows should be made secure against frost, either by a double sash, or outside protection of shutters....Potatoes that are suspected of rot, may sometimes be saved by sprinkling dry slacked lime over them. Look for, and make all necessary repairs about the out-buildings. At the close of the year make an inventory, and if no accounts have been kept heretofore, it will pay to begin then.

Notes for the Orchard and Garden.

The careful cultivator will have so improved the past favorable autumn, that his work for this year is finished, and he is already looking beyond the slight barrier that separates him from the coming year, and his thoughts are mainly of the future. The Notes of the past few months include whatever of out-door work may be practicable the present month, and as much of what we might say has been anticipated, our Notes are of necessity brief.

Orchard and Nursery.

Not for many years have apples been so abundant as in the present, and as the crop has been short in most parts of Europe, immense quantities have been shipped. But few orchardists can benefit by this foreign demand, as the varieties suited for shipping are limited in number, and those tender fleshed varieties like the Northern Spy, King of Tompkins Co., Yellow Bell-flower, etc., that are so fine for home use, are not in favor with shippers.

Varieties for Europe.—Shippers place the Green Newtown Pippin at the very head of the list, and after that take such hard-fleshed long-keeping kinds as Spitzenberg, Baldwin, etc. It will be well for those who contemplate planting orchards with a view to shipping the fruit, to consider the merits of some of those southern varieties, which have in the Western States proved such great keepers, like the Nickajack, which, though not of high quality, has great beauty and will keep until March.

Fruit in the Cellar.—The great abundance of apples and consequent low prices at the time of harvest, is very likely to lead to neglect in caring for them, and it would not be surprising to find good fruit scarce next spring. There has been, in some localities, premature ripening, and this indicates that the fruit will keep badly. This calls for unusual care in selecting that which is to be stored, and in its management during the winter. The main point to be looked after, is the temperature, which should be kept as low as possible and not freeze the fruit. One great advantage in having a detached fruit cellar, or one not under the dwelling, is that ventilation is not necessary. In the home cellar the carbonic acid given off by the fruit must be carried off, or the family will suffer. In the special cellar this may accumulate, and by excluding the air, greatly promote the keeping of the fruit.

Cions, whether to be used during winter for root-grafting, or to be kept until spring for top-grafting, should be cut early. They are much more likely to succeed than those taken after exposure to severe winter weather. Saw-dust, damp as it comes from the mill, is the best packing material, as it leaves no grit to dull the knives.

Pruning of large branches may be left until the

severity of winter is over, but knife work may be done at any time; young trees may be cut back into shape, and large ones may be trimmed.

Manures.—The orchard is the only part of the farm that is expected to yield two crops, and so long as the practice prevails of taking off a crop of hay or grain in addition to one of fruit, so long shall we have complaints of bitter rot and other evils. Not only should the land be given up to the trees, when of bearing age, but these should be manured, if not every year, at least every third year, not by putting a small heap next to the trunk, but by spreading a good dressing over the whole surface. If the season allows, this may be spread now and turned under by shallow plowing. If the ground is frozen, draw out the manure and leave it until spring.

Various Matters.—Root grafting may be done on stormy days: work upon one variety at a time, to avoid errors; as soon as grafted, place the roots in boxes of earth, correctly label, and keep in a cool cellar until spring....Destroy the eggs of the Tent Caterpillar if seen on the ends of the twigs.... See last month's Notes about rabbits and mice.

Fruit Garden.

But little is to be done, except to finish up fall work and get into winter quarters as soon as possible....Unfinished pruning of grape-vines, currants, and gooseberries, may be done in mild days.... Strawberries should have their covering when cold weather fairly sets in. See article on "Winter Protection," p. 471....The care for winter pears is the same as that for winter apples; when they begin to come into eating condition they are much improved by bringing them, a few at a time, into a warm room to finish off....If tender raspberries are not yet covered with earth, do it before freezing prevents....Apply coarse manure around currants, gooseberries, hardy raspberries, and blackberries; in the spring rake off the straw, and fork in the rest.

Kitchen and Market Garden.

The Notes of October and November suggest several things that may be done if the autumn is prolonged into the present month. In many localities the covering of spinach, the care of cabbages, etc., may be safely put off until now.

Cover gradually all crops that are stored out of doors. If celery in trenches is covered at once, there will be loss by decay, or it may be so warm that the plants will start into growth and the stalks become hollow. This, and roots in pits, etc., should have only a few inches of covering at first, to be thicker as the weather gets colder.

Cold Frames will need special attention. It must be remembered that the cabbages, cauliflowers and lettuce stored in these are not to grow, and that to allow them to start into growth will be very sure to ruin all. Only in very cold weather can the sashes be kept closed all day with safety. When the mercury is at 10° in still weather, the sashes must be lifted slightly, or pushed down an inch or two. If at 15° or 20°, more air must be given, and when it is at 30° or above, remove the glass altogether.

Cellars where roots are stored need to be kept cool, else the roots will shrivel or start into growth; in either case their quality will be injured. See what is said last month on covering with earth.

Seeds should be cleaned, properly labeled, and put away in a dry, cool place. Keep no stock concerning which there are doubts as to kind or quality. Some seeds, like the parsnip, are not good the second year, while others, like cucumber, etc., keep good a long time; hence a seed need not always be discarded because it is old. The works on gardening usually state the time that the seed of each vegetable retains its vitality.

Flower Garden and Lawn.

When we see, as we sometimes do, a lawn covered with coarse stable-manure, we are sure that there is trouble, in the way of weeds, in store for the owner. Only the most thoroughly composted manure should be used, and some contend that it is impossible to kill all the weed-seeds, no matter how thoroughly it is fermented. However this may be, we know that there is no risk in the various artificial manures; if compost is used, apply it now. ....Do not forget snow plows, as suggested last month....Heavy falls of snow may do much damage to trees, especially evergreens; when this lodges in the trees, shake it out before it becomes icy and fixed; deep snow in settling will drag down the lower branches of evergreens, and may break them off; this should be prevented by shoveling it away and freeing the branches.

Greenhouse and Window Plants.

The general rules for the care of house-plants given last month will be timely all winter.

The Temperature is more easily regulated in the greenhouse than in the parlor or living-room. A temperature of 70° in the day-time is sufficient for ordinary greenhouse plants, and this may be 15° or 20° less during the night. With a proper heating arrangement, this is easily managed in the greenhouse, but in rooms it is often exceeded, and as the dryness is in proportion, the plants fare poorly. It would be better for the family if the temperature of the rooms was oftener governed by the needs of the plants, as they are generally overheated.

Hanging Plants, whether in baskets, or in suspended pots (see page 470), are more apt to become over-dry than others, and need special care. Baskets are best watered by plunging them in a bucket or tub of water, and allowing them to get thoroughly soaked through; of course dripping must cease before they are returned to place.

Chrysanthemums that have bloomed in the house should be cut down, when past their prime, and the pots be placed in the cellar or a pit; in either case they should not become dust-dry.

Plants in Cellars.—A good cellar is an excellent place for storing plants that are used for summer decoration, and as a reserve place for winter plants. Being dormant, they need but very little water, but they should not be allowed to dry out altogether.

Bulbs in Pots, when they have made roots, which may be known by turning out the ball, are to be brought into the greenhouse, or warm room, where they are to flower. It is better to bring forward but a few at a time—say at the interval of a week or so—in order to have a long succession of bloom.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our record kept daily during the year, show at a glance the transactions *for the month ending Nov. 13th*, 1878, and for the corresponding period last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.
RECEIPTS.						
27 d's *this* m'th	513,000	5,821,000	3,971,000	567,000	1,079,000	1,217,000
26 d's *last* m'th	462,000	7,782,000	5,413,000	605,000	508,000	2,311,000
SALES.						
27 d's *this* m'th	521,000	6,413,000	4,812,000	531,000	826,000	1,473,000
26 d's *last* m'th	507,000	11,154,000	7,845,000	617,000	312,000	2,214,000

2. *Comparison with same period at this time last year.*

	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.
RECEIPTS.						
27 days 1878	513,000	5,821,000	3,971,000	567,000	1,079,000	1,217,000
26 days 1877	394,000	4,201,000	3,516,000	408,000	1,114,000	1,503,000
SALES.						
27 days 1878	521,000	6,413,000	4,812,000	531,000	826,000	1,473,000
26 days 1877	429,000	5,944,000	4,267,000	428,000	1,043,000	1,397,000

3. *Exports from New York, Jan. 1, to Nov. 8.*

	Flour. bbls.	Wheat. bush.	Corn. bush.	Rye. bush.	Barley. bush.	Oats. bush.	Peas. bush.
'78	2,311,000	47,698,300	24,650,000	3,991,000	1,564,000	3,512,000	362,000
'77	1,410,000	16,881,000	20,784,000	1,915,000	1,391,000	411,000	323,000
'76	1,672,115	21,949,300	15,152,708	978,196	29,223	574,000	952,000
'75	1,622,623	22,616,004	11,948,115	159,932	225	117,481	288,030
'74	1,899,775	33,079,216	17,506,617	581,465	3,330	106,342	321,249

4. *Stock of grain in store at New York.*

	Wheat. bush.	Corn. bush.	Rye. bush.	Barley. bush.	Oats. bush.	Malt. bush.
Nov. 11, 1878	4,539,387	4,179,584	547,226	880,910	1,306,069	18,057
Oct. 7, 1878	1,763,708	1,485,046	199,918	300,275	1,216,854	125,764
Sep. 10, 1878	1,167,808	1,115,458	71,886	202,774	697,668	131,841
Aug. 12, '78	1,126,813	598,736	62,647	203,224	472,866	137,003
July 11, '78	1,891,132	720,784	138,852	174,000	207,769	663,075
May 7, 1878	748,196	263,020	75,229	207,576	570,298	258,827
Apr. 15, 1878	1,370,081	541,648	106,375	396,861	857,273	253,424
Jan. 10, 1878	2,586,715	105,309	286,333	918,898	1,687,985	321,474
Nov. 5, 1877	984,374	2,643,302	166,949	368,429	1,720,758	326,388
May 7, 1877	761,986	468,809	190,046	174,375	317,881	291,854
Jan. 8, 1877	3,668,010	3,077,504	841,750	905,615	1,088,104	425,406
Dec. 11, 1876	3,110,263	3,385,554	218,841	878,810	1,182,822	512,041
Jan. 10, 1876	5,902,293	663,982	100,741	325,191	1,080,300	307,433

5. *Tide-water Receipts at Albany, from opening of navigation to Nov. 8:*

	Flour. bbls.	Wheat. bush.	Corn. bush.	Rye. bush.	Barley. bush.	Oats. bush.	Malt. bush.
'78	7,450	20,130,000	19,850,000	1,613,000	912,000	4,332,000	494,000
'77	14,690	9,842,300	20,541,700	1,074,000	2,853,700	3,510,500	554,500
'76	27,800	10,989,700	10,221,700	698,800	1,878,700	2,647,2 0	634,700
'75	77,300	17,114,400	7,929,900	181,400	2,160,700	2,168,600	596,300
'74	139,200	21,295,600	17,141,800	263,200	1,698,500	2,795,600	....
'73	128,200	20,192,600	17,195,500	914,500	1,667,600	3,040,206	....
'72	104,100	7,801,400	23,484,200	357,3 0	2,119,000	5,075,300	....
'71	233,000	18,184,000	18,124,000	707,200	2,578,000	4,833,200	....
'70	356,600	13,918,300	4,384,300	529,900	2,306,800	5,210,900	....

CURRENT WHOLESALE PRICES.

	Oct. 12.	Nov. 13.
PRICE OF GOLD	101 1-8	100 1-8
FLOUR—Super to Extra State	$3 40 @ 4 40	$3 15 @ 4 25
" Super to Extra South'n.	3 50 @ 6 00	3 25 @ 5 75
" Extra Western	3 85 @ 8 50	3 70 @ 8 50
" Extra Genesee	3 90 @ 5 75	3 85 @ 5 50
" Superfine Western	3 40 @ 3 85	3 15 @ 3 65
RYE FLOUR, Superfine	3 70 @ 3 40	2 90 @ 3 45
CORN-MEAL	2 20 @ 2 90	2 20 @ 2 85
BUCKWHEAT FLOUR, ₱ 100 lbs	1 60 @ 1 95	1 70 @ 2 00
BUCKWHEAT, per bush	48½@49½	— @ 50
WHEAT—All kinds of White	95 @ 1 10½	98 @ 1 12
All kinds of Red and Amber	80 @ 1 05½	75 @ 1 08
CORN—Yellow	48 @ 65	47 @ 63
" Mixed	45½@ 48½	42 @ 47
" White	50 @ 62	50 @ 63
OATS—Western	25½@ 38½	28 @ 40
" State	27½@ 38½	29 @ 40
RYE	54 @ 61	58 @ 63
BARLEY	85 @ 1 35	75 @ 1 25
BARLEY MALT	85 @ 1 35	75 @ 1 30
HAY—Bale, ₱ 100 lbs	80 @ 95	80 @ 95
STRAW, ₱ 100 lbs	25 @ 45	20 @ 45
COTTON—Middlings, ₱ lb	10¼@ 10½	9¾@ 9¾
HOPS—Crop of 1878, ₱ lb	8 @ 15	8 @ 15
" " 1877, ₱ lb	5 @ 8	5 @ 8
" olds, ₱ lb	1 @ 4	1 @ 4
FEATHERS—Live Geese, ₱ lb	35 @ 45	35 @ 55
SEED—Clover, West. & St. ₱ lb	7¼@ 8¼	6¾@ 7¾
" Timothy, ₱ bushel	1 15 @ 1 30	1 20 @ 1 25
" Flax, ₱ bushel	1 46 @ 1 50	1 37 @ 1 40
SUGAR—Ref'g & Grocery, ₱ lb	6¾@ 8¾	6 @ 8¾
MOLASSES, Cuba, 50 test ₱ gal	32 @ 33	32 @ 33
" New Orleans, new, ₱ gal	45 @ 55	40 @ 50
COFFEE—Rio (Gold)	13½@ 17	12½@ 16¾
TOBACCO, Kentucky, &c., ₱ lb	2½@ 14	2½@ 14
" Seed Leaf, ₱ lb	3½@ 50	3½@ 50
WOOL—Domestic Fleece, ₱ lb	20 @ 42½	20 @ 43
" Domestic, pulled, ₱ lb	20 @ 38	20 @ 38
" California, spring clip	12 @ 27	12 @ 27
" California fall clip	12 @ 20	12 @ 20
TALLOW, ₱ lb	6½@ 7¾	6½@ 6¾
OIL-CAKE, ₱ ton	29 00 @30 00	27 50 @28 00
PORK—Mess, ₱ barrel	8 80 @ 9 75	7 45 @ 7 90
" Extra Prime, ₱ barrel	@ 9 25	@ —
BEEF—Extra mess	10 00 @11 00	10 50 @11 00
LARD, in tcs. & bbls, ₱ 100 lb	6 60 @ 7 05	6 15 @ 6 60
BUTTER—State, ₱ lb	10 @ 26	12 @ 28
" Western, poor to f'cy, lb	7 @ 25	7 @ 27
CHEESE	4 @ 9¾	3½@ 9¼
EGGS—Fresh, ₱ dozen	20 @ 23	24 @ 28
VENISON, ₱ lb	— @ —	8 @ 15
HARES, ₱ pair	— @ —	35 @ 40
RABBITS, ₱ pair	— @ —	30 @ 35
POULTRY—Fowls, ₱ lb	10 @ 15	8 @ 13
" Chickens, ₱ lb	10 @ 18	8 @ 14
" " Penn., ₱ lb	16 @ 18	12 @ 14
" Roosters, ₱ lb	5 @ 8	4 @ 8
Turkeys—₱ lb	9 @ 14	8 @ 13
Geese, ₱ pair	1 00 @ 1 75	1 00 @ 1 50
Ducks, ₱ pair	45 @ 1 00	45 @ 90
PIGEONS, wild, ₱ doz	1 50 @ 2 00	1 75 @ 2 00
GROUSE, ₱ pair	80 @ 1 00	65 @ 90
PARTRIDGE, ₱ pair	50 @ 85	50 @ 90
SNIPE, per doz	1 25 @ 1 75	75 @ 1 00
WOODCOCK, ₱ pair	45 @ 60	35 @ 60
REED BIRDS, per doz	1 00 @ 1 25	1 00 @ —
DUCKS, Wild, ₱ pair	35 @ 75	50 @ 1 50
QUAIL, ₱ dozen	— @ —	1 25 @ 1 50
CHESTNUTS—₱ bush	5 00 @ 5 50	3 50 @ 4 50
HICKORY NUTS—₱ bush	1 75 @ 2 50	2 00 @ 2 50
APPLES, ₱ barrel	75 @ 1 75	62 @ 2 00
" Crab, ₱ bbl	3 50 @ 8 00	— @ —
PEARS, ₱ bbl	2 00 @12 00	5 00 @10 00
" California, ₱ box	— @ —	3 00 @ 4 50
GRAPES, ₱ lb	4 @ 12	6 @ 10
" California, 40-lb box	3 50 @ 8 00	5 00 @10 00
QUINCES, ₱ bbl	3 00 @ 7 00	2 00 @10 00
CRANBERRIES—₱ bbl	4 50 @ 7 00	5 00 @ 7 00
PEANUTS, domestic, ₱ bush	1 40 @ 1 50	1 10 @ 1 30
BEANS—₱ bushel	1 40 @ 2 25	1 50 @ 2 10
PEAS—Canada, in bond, ₱ bu	78 @ 80	70 @ 72
POTATOES, ₱ bbl	1 75 @ 2 75	1 75 @ 3 00
" Sweet, ₱ bbl	1 00 @ 1 75	1 00 @ 1 50
BEETS, ₱ 100 bunches	75 @ 1 00	— @ 75
TURNIPS ₱ bbl	1 00 @ 1 25	75 @ —
BROOM-CORN	4 @ 7	4 @ 6
SQUASH, ₱ bbl	1 00 @ 1 75	1 25 @ 2 00
CABBAGES—₱ 100	2 25 @ 5 00	2 00 @ 5 00
ONIONS—₱ bbl	1 00 @ 1 25	1 00 @ 1 50
CELERY, per dozen	— @ —	75 @ 87
CAULIFLOWER, ₱ bbl	— @ —	1 50 @ 2 75

Gold has fallen to 100⅛, as against 101⅛ on Oct. 12; 100¼ on Sept. 12; 100⅛ on Aug. 12; 100¼ on July 13; 100⅝ on June 13; 100⅛ on May 13; 100¼ on April 17; 102½ on Jan. 12; 103 on Dec. 12; 102¾ on Nov. 12....Business in Breadstuffs has been on a restricted scale; values have fluctuated considerably, leaving off lower, and more or less irregular. The export inquiry has been fair, especially for Winter Wheat, and for suitable grades of Flour, the latter chiefly for the English, West India, and South American Markets, and the Wheat largely for the Continent; but this demand fell off toward the close, influenced in part by the unfavorable tenor of the later cable advices. Spring Wheat has not been in much request, and the bulk of the business in this class has been in the grade of No. 3. Speculation has been rather less animated in Wheat and Corn....Cotton has been further depressed in price, on free offerings, and a moderate call for supplies, outside of the speculative interest, which has been fairly active....Provisions have been quoted variable in price; on hog products again much lower, leaving off weak; on Beef, firmer; and Butter, of strictly prime to fancy quality, higher, with a moderate movement reported....Seeds have been more sought after, but at reduced figures for most kinds....Tobacco has been of readier sale; and Hops have attracted more attention, while Hay and Straw have been in request at former quotations....Wool has been about steady, but not in urgent demand; and holders have quite promptly met all requirements of purchasers at the ruling figures.

New York Live-Stock Markets.

Beeves.—The market opened heavy and prices fell off until the arrivals became more nearly in a ratio with the demand. With lessened receipts, a gain of ¼c. ₱ lb on the average, and ⅛ to ¼c. ₱ lb on low grade stock, was made. This gain was soon turned to loss, the aver-

age of last week being the unexampled low figure of 7¾. Trade closed very weak with sales of Texans and Colorados at 7@7¼c. ℔ lb on estimate of dressed weight of 55 lbs. ℔ cwt. Natives of same quality sold heavily at same rates; mediums of 55 to 56 lbs. ℔ cwt. sold at 8@8¾c., many of these being taken for export; extras 56@57 lbs., sold at 10@10¼c. ℔ lb.

RECEIPTS.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Oct. 21	12,850	105	3,525	31,792	45,013
Oct. 28	10,078	105	2,770	33,123	49,774
Nov. 4	9,701	151	2,874	31,953	43,581
Nov. 11	12,702	148	2,813	37,246	57,029
Total for 4 Weeks	44,831	509	11,982	134,119	197,857
do. *for prev. 5 Weeks*	60,519	354	18,058	163,113	135,442

	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Average per Week	11,207	127	2,995	33,529	49,464
do. do. *last Month*	12,104	71	3,611	32,632	31,088
do. do. *prev's Month*	11,238	66	3,677	28,749	26,007

The prices for the past four weeks were as follows:

WEEK ENDING	*Range.*	*Larger Sales.*	*Aver.*
Oct. 21	6 @10¼c.	7¼@ 8¾c.	8 c.
Oct. 28	6½@10½c.	7 @ 8¾c.	8 c.
Nov. 4	6½@10½c.	7¾@ 9 c.	8½c.
Nov. 11	6 @10¾c.	7¼@ 8¾c.	7¾c.

Cows.—There has been more demand for good cows, but poor ones are neglected and unsalable. A number of good N. Y. State cows went off readily at $55 to $60 per head, and these prices may be taken as an index of the market. Poor cows were refused at $35.

Calves have been quiet during the past month with prices ranging lower gradually. The range has been from 2¾@7½c. ℔ lb live weight; closing prices were 2@2½c. ℔ lb live weight for grassers, 3@4½c. ℔ lb for fed calves, and 5@7c. for good to fancy veals.

Sheep.—A dull market has prevailed, with some irregularity in prices. At the close prices ranged from 3¾ to 4½c. ℔ lb live weight; choice wethers brought 4¾c. ℔ lb., and prime lambs 4½@5c. ℔ lb.

Swine.—Live hogs have been at times unsalable, and prices have receded considerably. 3½@3¾c. ℔ lb has been quoted at times, but without business, and at the close, the heaviest receipts ever known in the city in one week, broke the market to 3½@3¾c. ℔ lb., with a stronger feeling at the lower prices. City dressed have sold for 4@4¼c. ℔ lb., and some sales of heavy hogs have been made at a shade less than 4c. Closing quotations are a little in advance of poor business.

The Horse Market.—But little business has been done the past month. Prices are somewhat lower. Sales of small driving horses have been made at $100 to $150 per head. Western carriage horses have sold at $600@$850 each. A pair of fine 15¾-hand bays brought the latter price. There was no inquiry for heavy draft or car horses. A shipment of half-bred Normans from the West was made to France, this being one of the rare curiosities of the horse trade and a reversal of the usual current. 30 head of fine coach horses were shipped during the last week to London.

Prices of Feed.

Bran, per ton	$18.00@$20.00
Middlings, per ton	19.00@ 21.00
Ground Feed, per ton	15.00@ 21.00
Linseed-oil-cake, western, per ton	41.00@ 47.00
Cotton-seed-cake, per ton	25.50@ 40.00
Chandler's Scraps, per lb	3@ 4

Prices of Fertilizers.

No. 1. Peruv. Guano 10 p. ct. ammonia, standard, ℔ ton	$56.50
do. do. Lobos, do. do. do	47.50
do. do. guaranteed, ℔ ton, cargo	56.00
do. do. rectified, per ton, 9.50 p. c.	69.00
do. do. do. do. 8.40 p. c.	51.00
Soluble Pacific Guano, ℔ ton	45.00
Excelsior Fertilizer Works, Fine Ground Raw Bone	55.00
Mapes' Complete Manure (Ville formula) p. 1,000 lbs	26.14
do. do. do. Grain and Grass, ℔ 1,000 lbs.	25.00
do. Fruit and Vine Manure do.	17.50
do. Bone, strictly pure, meal ....per ton.	42.00
do. do. do. extra fine.... do.	40.00
do. do. do. fine..... do.	38.00
do. do. do. medium..... do.	36.00
do. do. do. dissolved.... do.	42.00
Stockbridge Corn Manure, per acre	20.00
" Potato do do	10.00
" Tobacco do do	50.00
" Rye do do	10.00
" Wheat do do	15.00
Bowker's Hill and Drill Fertilizer, per ton	45.00
Gypsum, Nova Scotia, ground, per ton	8.00
Nitrate of Potash (95 per cent.), per lb.	9 @9½c.
Sulphate of Potash (potash 41 per cent) per lb	3 @3½c.
do. do. (potash 27½ per cent) per lb.	1½@2 c.
German Potash Salts (potash 13 to 15 p. c. p. ton	$15.00@18.00
Muriate of Potash (potash 50 per cent), per lb	1¾@2½c.
Nitrate of Soda, per lb	3½c.@4½c
Sulphate of Ammonia (25 per cent.), per lb	4¼c.@4¾c.
Dried Blood (ammonia 13 per cent) per ton	$40.00@45.00

Beef Cattle for Southern Pastures.—"H. Q. A.," Beaufort Co., S. C. Shorthorns, Herefords, or Polled Aberdeens may be used to improve the native stock of the South; and the Bermuda and other grasses, with cow-peas, clover, roots, corn, and cotton-seed, can be made to fatten them. But it can hardly be expected that these cattle can be as heavy or as thrifty as those pastured in the cooler climates of Kentucky and Illinois. Nevertheless, by good management, feeding beef ought to be made profitable in many districts of several of the Southern States. In many cases the Devon will be found superior to the Shorthorn on light southern pastures.

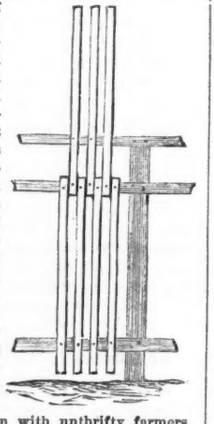
containing a great variety of Items, inc'uding many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

The Best Holiday Present.—Send to a relative notice that you have paid for him a year's subscription to this journal, and all through the year every time a number arrives that friend will have a new reminder of your kindness. The many thousand hints and suggestions its pages will afford will be turned to profitable account, and supply additional cause of gratitude.

Choosing Seed Corn.—"N. S.," Tucker Co., Va. There have been numerous experiments as to the effect of choosing seed from the ends or the middle of the ears. The general results have been that there is no essential difference; so long as the ends are well-developed, the seed is as good from the tips and butts as from the middle. Corn will not deteriorate if the best ears are selected and kept for seed year by year. There are farms in many of the older States where good crops have been grown for half a century or more from one variety of seed.

Sending Subscriptions.—No Letter Needed.—At the bottom of page 488 will be found a convenient blank form for filling up with names of subscribers. This form can be cut off without materially injuring the paper for preservation, and it will save the necessity of writing a formal letter to accompany the remittance.

Chicken Yard Fence.—When it is desired to keep chickens from straying about the farm or gardens, or to confine breeding poultry, the fence represented in the engraving will be found to answer the purpose, and while it is neat and substantial, it may be constructed at a low cost. Three light rails are nailed to the posts, two near the top, as indicated. Slats are fastened from the lower to the second rail; and others from the second to the upper one, their lower ends being placed between the ends of the bottom tier. The slats are 2 inches wide, split from inch boards; the total hight of the fence is about seven feet. It costs no more to make a neat fence of this description, than the unsightly things so common with unthrifty farmers.



Farming on Shares.—"Capt. C. F. K.," Fort Stockton, Texas. A plot of ground being furnished by one party, the seed and labor by the other, one-half the products to each is considered in many sections as a fair division. Exact justice in such matters, however, can only be reached by a careful estimate of the value of what each one puts into the partnership: the interest on the value of the land on the one side, and the cost of seed and labor on the other; then the products may be fairly divided according to these figures. If it be argued that the land-owner has no guarantee for skill and care on the part of the tenant, so the latter has no surety for the condition of the land. The halving system is a poor one at best, for what would be fair when land is worth $50 per acre, would be no guide on $10 land. No one rule can be made for general application, except the business rule.

Practical Floriculture.—Mr. Peter Henderson's work with this title, while it has been of value to commercial florists generally, has been especially useful to beginners. We have known of a number of cases in which persons in small places, with a taste for cultivating plants or those who were already engaged in market gardening, have, by the aid of this work, put up small greenhouses, which enabled them to add essentially to their incomes. There is scarcely a village or town in the country of 500 or 1,000 inhabitants, where a small greenhouse, one of sufficient size to meet the wants of the community, might not, in addition to other occupation, pay the owner a fair profit. The Germans seem to understand this, and in the towns around New York, the German tailors, shoemakers, and other mechanics have their little greenhouses, in which they raise cut flowers for sale to city florists. Other mechanics can in a similar manner raise plants for sale. One of the great merits of Mr. Henderson's book is, that it recognizes the wants of people of small means, and gives directions for building small and cheap structures, as well as large and costly ones, while it is at the same time very full on the propagation and care of the plants. In the present edition several chapters have been added, giving information on such subjects, as letters of inquiry have shown to be needed. The chapter on uniting floriculture with market-gardening will no doubt meet the wants of many who are already engaged in vegetable-gardening, and would like to add flower-growing to it, or who, fearing that either alone might not pay, would unite the two. Though the work is essentially enlarged, the price remains as before, $1.50, post-paid, by the Orange Judd Co.

Over 20,000 Men, Women, and Children have received valuable articles *free* from this Office, in return for their kind efforts in collecting and forwarding lists of subscribers—with profit to themselves, and to those they have invited to become readers. The reader of this might as well be one of the thousands who will receive these premium articles the present winter, or even the present month. It is worth trying. See page 481.

Ten Thousand Five Hundred Barrels are a good many apples—yet this quantity left New York City for Europe on a recent Saturday. There is always a demand for our apples abroad, even in years of plenty there, as our fruit is much fairer and finer than theirs, as well as higher flavored. While we are glad that the Europeans get our fruit, we regret that but little of the profit of the shipment reaches the hands of our farmers. In this case the shippers make the money.

"Horse Sorrel" once more. In an item in the October "Basket," it was stated that we knew of no plant generally called by this name. This has brought out several letters, which show the utter confusion that exists in the application of common names. There are two very different genera of plants known as Sorrel. There is the genus *Oxalis*, of which in the older States there are three species, all with three-parted, clover-like leaves, and showy flowers with five petals each; one has yellow, one violet, and the other white, red-veined flowers. The other genus is *Rumex*, the Sorrel of which has spear-shaped leaves, and small flowers without petals. The common names as fixed by long usage in England and in most of the older States here, are: for the species of *Oxalis*, "Wood-Sorrel," and for the species of *Rumex* in question, "Sheep-Sorrel." These common names have been adopted by the botanists of both countries, and it is very desirable that they should, for the sake of definiteness, be generally observed. But it seems that in some parts of this country the common name belonging to *Rumex* has been shifted to *Oxalis*, and that is wrongly called "Sheep-Sorrel," while *Rumex*, being thus deprived of its rightful name, is furnished with another—"Horse-Sorrel." We can see no reason for this change, as the names as mentioned above have been so applied for many years—we may say for centuries, as Parkinson in 1640 figures Oxalis as "Wood-Sorrell," and *Rumex Acetosella* as "Sheepe-Sorrell." Let us try to preserve as far as possible uniformity in the use of common names of plants.

The Grape-Vine Raspberry.—An "Agent" is around among the Kansas farmers trying to get orders for a new variety of Raspberry called the "Grape-Vine." This is said "to look just like a grape-vine, and to grow from year to year the same."—We repeat, that new and valuable plants do not first make their appearance in the hands of peddlers. When these chaps offer anything new and wonderful—don't order it.

When You read this number through, please consider whether there are not hints and suggestions that you would not be without for the cost of the paper per year. Well, all through the year to come, many active, intelligent people will be all the while hunting up other new suggestions and information to fill up the pages. We feel sure that it will *pay* you and your neighbors to have the paper. Please bring them along to enjoy and get the benefit of our chatting circle for the new year, 1879.

Packing Eggs.—"E. A. D.," Lamar, Mo. It is "milk of lime" that is used to preserve eggs, not milk and lime water. When eggs are preserved by packing them in milk of lime, or by oiling, it is not necessary to put them in salt; chaff, cut straw or any other light material may be used to pack the oiled eggs. Oiling will not answer when eggs are packed for sale, as it injures the appearance. There is nothing else better than the lime.

Quinsy in Hogs.—"P. M.," Hemlock Hollow, Pa. Quinsy, common in hogs that are exposed to cold and damp, is an inflammation of the throat, with swelling of the glands, and if this is excessive, there is danger of suffocation. To prevent it, keep the pigs warm and dry. Treatment of the disease: rub mustard paste upon the throat, put the pigs in a warm place with plenty of dry bedding, and give warm linseed or oat-meal slops.

The Next Volume

Of this Journal, will *far excel* the present one, and all previous ones, in *useful*, *practical*, and varied information, which will be *valuable to every reader.*

Reading Pays, not merely in what tells one that he can at once do, but the thoughts he gets in reading what others do and say, incites thoughts and plans in his own mind that result in profit. The reading, thinking man makes his head help his hands. Brains tell everywhere, and in nothing more than in farming, gardening, and housekeeping. The fewer brains one has of his own, the more should he get all the facts and suggestions he can out of other people's thoughts and experience.

Bound Copies of this volume, and of every previous volume back to Vol. XVI. (1857), neatly bound, with gilt backs, Index, etc., are supplied at $2 each (or $2.30 if sent by mail). See Publishers' Notes, on first page.

The Kind of Farming that Usually Pays.—In his "Talks," pages 462-3, our contributor returns to a subject that he has often talked about and brought forward in many ways, and with numerous illustrations. But the lesson is none the less important, and it should be carefully considered by every cultivator.—Timothy Bunker, Esq., over the signature of "Connecticut," gives a forcible example on page 463. Land so drained and worked as to be independent of rains and drouth, and so treated as to secure a large yield, as a general rule, is sure to be profitable, taking one year with another. Take this Connecticut instance: Which would have been the most *profitable:* to have continued trying to get something from the land worth $5 an acre; or, if necessary, to have sold 9 acres of it, and expended the $45 got for it, on the other two acres? In the latter case, he would get a good profit from the work on the two acres; but he would grow poorer while working the 11 acres. Brethren, think on these things. Thinking pays as well as working—and reading other men's thoughts helps one to think. "Brains" is a most excellent manure, as our good friend Timothy Bunker, Esquire, would say.

Borers.—"J. A. J.," N. Y. City, does not bore one by the length of his letters. "Please let me know how I can get rid of borers in an apple-tree?"—is plain and comprehensive. He allows us to infer that he knows they are in the tree. The Round-headed Borer, the one known in the Eastern States as *the* borer, lives for two years on the sap-wood of the tree, and may be cut out by the use of a strong knife; in the third year it enters the solid wood of the tree, when it must be followed by a wire and punched to death. When the borer is once in the trunk, no external application will avail; equally useless is plugging the holes, recommended in some papers.

New-Zealand Wagon.—"S. F. E.," Dunedin, Otago, New-Zealand, sends a sketch of a wagon with the following description: "I had a double-shafted wagon built to order, with hind-wheels 6 ft. high, fore-wheels 5 ft., tires 6 inches wide, and iron axles; body 3 ft. deep, and 12½ ft. long. This wagon was so easy-running, on

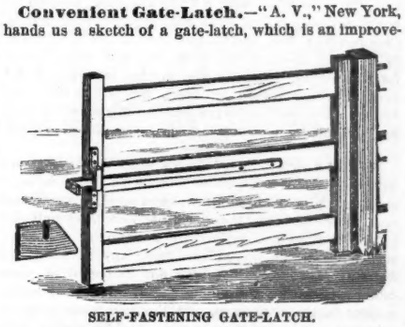
A NEW ZEALAND FARM WAGON.

account of the high wheels, that I drew it myself, a yard forward, and backed it, though it weighs 1 ton 8 cwt., and I weighed less than 11 stone at the time. It was used in carting some manure from 8 miles away, 4 horses being attached (2 and 2), and for the last load, to finish the job, we drew 5 tons 16 cwt., or 7 tons 4 cwt., including the wagon. The road was good, but hilly; the horses were of moderate size, but drew the load without difficulty." This experience is valuable, as showing the superiority of high wheels for ease of draft. High wheels compare with low wheels just as a long lever does with a short one. The broad tires and iron axles doubtless added to the easy running. Such wagons are inconvenient for loading, and perhaps less economical than lower and smaller ones for ordinary farm-work; but for large loads and long distances, this style is worthy of consideration. Thanks to our far-away correspondent for his interest in the *American Agriculturist.* We have a large constituency in that part of the world, and like to hear from them often. America can learn from, as well as give instruction to, other countries.

To Prevent Canvas from Shrinking.—"Enquirer," Marshall Co., Iowa. If the canvas on your harvester is coated with boiled linseed oil, it will not absorb water and will not shrink. Apply two coats on both sides of the canvas, and give it a coat every season afterwards. A large sheet, thus prepared, may be thrown over the machine when there is danger of rain.

The Japanese Persimmon or Kaki.—The Rev. Henry Loomis, San Francisco, who has been engaged in introducing the Japanese Persimmon into California and other parts of the country, sends us a neat album containing reproductions in colors from Japanese paintings of this fruit. There are nine varieties of different sizes and shapes; they are mostly scarlet in color, two of them being yellow. We have before mentioned the excellence of the fruit, and hope it may be found adapted to a wide extent of country. The limits of its hardiness have yet to be learned by experiment; our own experience, a short distance north of New York, has not been favorable. It is hardy at Washington, D. C., and is reported to be so at Flushing, Long Island.

Convenient Gate-Latch.—"A. V.," New York, hands us a sketch of a gate-latch, which is an improvement on the ordinary form. It is a long flat bar of iron, turned up at the outer end, and fastened by two bolts near the inner end, as indicated in the engraving. By this arrangement the latch becomes a spring, and forces itself into the catch when the gate is closed, with the surety of keeping it there, even when slammed to. The failure of a latch to stay in the catch, is a frequent cause of annoyance and inconvenience, and often results in the straying of animals from the pasture or yard.



SELF-FASTENING GATE-LATCH.

Rape.—"S. C.," State Center, Iowa. Rape may be grown for feeding, but it will not pay to grow it for seed, because there is no demand for it as a source of oil. It is, however, an excellant crop for fall and early spring feeding. A peck of seed is sown per acre as for turnips, in July, to be eaten off in September and later. Or it may be sown in September, and eaten off in the spring.

A Good Dinner for Four Cents seems a very low price, yet it is possible in a family of six—two adults and four children, as stated last month in our notice of Miss Juliet Corson's little book entitled "Twenty-five Cent Dinners." It was there announced that the Orange Judd Company were to become the publishers of this work, which they have done at the suggestion of the editors, who were so well convinced of its usefulness, that they felt it should have the widest possible circulation among all classes of the community. The work was written to teach the wives of mechanics and others of moderate income, how to live both well and cheaply. Many cook-books in their recipes direct this and that, without regard to expense; in this little work the cost of everything is counted, and we regard this as a most useful feature of the book, as it is quite as important for the wives of farmers and villagers to count the cost, as for city house-keepers. But after all, we think that the chief utility of the work will be in showing how easy it is to have a variety of food, and whatever will do this must be useful. Fried meat, or the meat put into an oven, baked to a crisp, and called "a roast," are quite too frequent in this country, whether in city homes or farm houses, while soups and stews are correspondingly rare. The present edition has a chapter prepared especially for it on the preparation of fruits for the dessert. The "Twenty-five Cent Dinners" is sent for Twenty-five Cents from this office, by mail, post-paid.

Light in the Dairy—Animal Odor.—"J. A.," Wash. Territory. Light has the effect of deepening the color of both cream and butter. It is well to have abundant light in a dairy, but let it be protected from the direct rays of the sun, lest the temperature be raised excessively. The so-called "animal odor" is something of a humbug. It is a new sensation in dairying. When cows are cleanly fed and kept, the animal odor is not disagreeable. The "sweet breath of the heifer" was noticed by Virgil, and by every dairyman since. But these sweet-breathed heifers do not eat horse-droppings in filthy yards, nor stand up to their knees in dung. That is where the animal odor usually comes from.

Quantity of Grain for a Colt.—"M. D.," Scotia, Neb. It is not well to give much grain to colts during their first winter. If fed too liberally, then, they are quite sure to do poorly on pasture-feed the next summer; enough should be given them, however, to keep them growing and healthy. A pint to begin on, and not over a quart a day later, is sufficient the first winter. Ground oats is an excellent grain-food for colts. An occasional small foddering of chopped roots is beneficial.

Excess of Salt.—"J. F. G.," Almont, Mich. Salt in excess is injurious to animals. It acts then as an irritant and produces inflammation of the throat and intestines, and sometimes it causes diarrhœa. A small handful is sufficient at one time, and it should be given with the food when not kept constantly before them.

The Shepherd's Manual, By Henry Stewart; a new edition. This work has had a remarkable success, and the reason is evident. It is the only work of late years, that gives all the breeds a fair showing. The American works that immediately preceded it, were devoted to a particular breed only. In a country so varied in its natural features as ours, it is folly to suppose that one breed of sheep is best suited to all sections. This work is not devoted to wool producing only, but recognizes the fact that there is an increasing demand for mutton, and that the raising of early lambs is a profitable branch of sheep raising. The work is not merely the reproduction of some English author, but its teachings are from American experience, and it covers the whole subject of the shepherd's management, in a very satisfactory manner. The work has been revised by the author, for a new edition, and he has added an important chapter upon the various localities suited to this important branch of agriculture, indicating the breeds and crosses most likely to succeed in each. Though thus enlarged, the price remains the same, and it is sent post-paid by the publishers, the Orange Judd Co., for $1.50.

Guano on Grass Lands.—"J. T. N.," St. John's, Newfoundland. Guano, and other fine, concentrated fertilizers, should be applied when growth is beginning, which, for grass, is in early spring. It is not necessary to compost these fertilizers, unless to secure even distribution, as they are already in the condition to furnish plant-food. A fertilizer distributor is an economical machine when large quantities are used (say for ten acres or more). When chemicals or other fine fertilizers are mixed together, it should be done immediately before using them.

Subsoiling in Minnesota.—"K. O. S.," Lake Park, Minn. It will hardly pay to subsoil rich prairie land. If "it is too rich for wheat," sow the wheat very thinly, about half a bushel to the acre. There will then be less danger of the crop lodging from weakness of straw, which will be stronger, and the grain will be heavier, and more of it. It will pay to try thin seeding.

A Cheap Ventilator.—There is no necessity for an expensive ventilator for a stable or barn. The simplest method is to connect the stable floor with the outer air by means of a square wooden tube, the upper end of

CHEAP VENTILATOR.

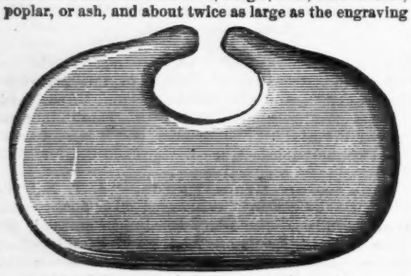
which is carried through the roof about a foot. A cap, made as shown in the engraving, is fixed to the roof over the opening of the tube to keep out rain and snow. This answers all the purposes of ventilation, and can be constructed at small cost by any ordinary carpenter.

Guernsey Herd Book.—The prominence which the Guernsey cattle are assuming in this country, must be pleasing to those who know the value of the breed for its milk and butter qualities. We have at hand the first volume of "The Herd Register of the American Guernsey Cattle Club," recently published, and edited by Edw. Norton, Farmington, Conn., Secretary of the Club. Bulls to the number of 96, and 217 cows, are recorded, which indicates a larger number of pedigree animals than many had supposed were in the country, as these figures probably include but a portion of the entire number

Save the Index Sheet, which is put *loosely* in this number, so that it can be bound or stitched at the beginning of the volume. It enumerates about 2,000 valuable, paying facts and suggestions, and 600 illustrations.

$100 for 13 Cents.—A Cow that Sucked Herself.—A Business Man furnishes us the following for publication, but "don't want the notoriety of having my name in print:" "....I have taken the *American Agriculturist* for many years, and always find in *each* number some hint or suggestion that I would not be without for its cost, of 13 cents. Here is an illustration of the value of one number. I had a fine blooded Jersey cow that cost me $150, and was worth it to me, until she contracted a habit of sucking herself. I tried various remedies, including an unsightly head frame with projecting sharp points. I was so disgusted with the creature that I would have jumped at an offer of $50 for her. Your paper told me to put a short piece of small gas-pipe across her mouth, leaving the ends open, and make two or three small holes in its middle, tying it in with a small cord extending to the horns. I had this done with a bit of iron pipe I chanced to have. The air admitted through the ends and little holes prevented suction; the pipe did not interfere with her eating, or make much show, while it entirely broke her of her bad habit, and after awhile it was left off. Now I would not take $150 for her as a milker and breeder. That item was surely worth $100 to me, and that number cost me only 13 cents. I say to every man: you can't fail to get some hints every year if not every month that you can not afford to be without for many times the cost of the paper."—[We have multitudes of testimonials of a similar character.—EDS.]

Jewel to Prevent a Cow from Sucking Herself.—A subscriber sends a model of a "jewel" which is used in the nose of a cow that sucks herself. It is made of some soft, tough wood, such as bass, poplar, or ash, and about twice as large as the engraving



A WOODEN JEWEL FOR A COW'S NOSE.

represents. The distance between the knobs of the two lobes is about ¾-inch, just enough to permit their being pressed over the thick edge of the cartilage of the nose, and close enough to keep the "jewel" in place. The instrument hangs down over the cow's nose, and prevents her getting the teat into her mouth, but does not hinder feeding. It is an easily made and practicable device.

Price of Milk at the Factories.—"T. B.," Saginaw, Mich. The factories are now paying less than one cent a pound for milk. When cheese is 10 cents, milk should be worth about one cent per pound; for it requires 10 pounds of milk to make a pound of cheese. The value of milk depends upon the prices of its products: cheese and butter. The better these are, the higher price they bring, and the more the milk is worth.

Good Service Complimented.—At the recent annual fair of the Farmer's Club, Dr. Cramer, President of Trinity College, North Carolina, addressing Capt. A. Parker, said: "By request of the Society, I present you, for your prompt attendance at *every* meeting since the Society was organized, a copy for the coming year of the *American Agriculturist*, the best Agricultural Journal in the United States... ."—(a double compliment!). So writes Chairman D. Reid Parker.....QUERY: If each one of the 3,500 Agricultural Societies, more or less, in this country, should similarly compliment each officer having the *same* claim to recognition, as Capt. Parker, by how many copies would the circulation of this journal be increased? "We pause for reply."....P. S.—We cannot calculate upon a *large increase* from this source, first, because we fear there will be comparatively few who are able to show such a record; and, second, because, as a rule, the active, enterprising men who are foremost and most faithful in helping on agricultural improvement, are already regular readers of this journal.

The Nettle Story.—Certain newspaper statements, like comets, have their orbits, and come around again at intervals. At one time it is the man who produced seedless apples by putting in a bud upside down; at another it is the one who produced the sweet and sour apple by inserting the halves of two buds. Just now it is the Nettle, and we can hardly take up a paper without seeing a statement of the great value of the Nettle as a fibre-producing plant, and that our Consul somewhere has communicated the important news to our Department of State. The last article upon this subject that we have met with, concludes thus: "The question occurs how a plant possessing such a variety of merits should have been for ages regarded as the most noxious of weeds?"—Having heard of Nettle linen as long as we have known about the uses of plants at all, we, as a matter of curiosity, traced back the uses of the Nettle fibre. Having reached the ancient Egyptians, we stopped in the search. There are now parts of Ireland, Scotland, and of Germany, where the country people have used for ages and still use the Nettle fibre to make their household linen. The reasons why it is not more cultivated are: the small quantity of fibre and the difficulty of separating it, and the fact that to produce a really fine fibre, the richest possible soil is required.

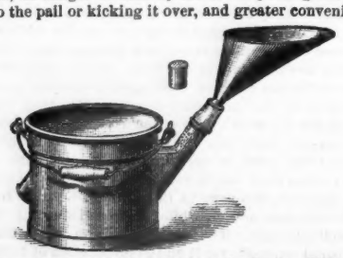
Other Journals and Magazines in Club with the American Agriculturist at materially reduced rates. See page 483.

Mocking-Bird Food.—"A. W. C.," Fall River, Mass. Mocking-birds are difficult to keep, but, with care in feeding, the obstacles may be overcome. For a steady diet, use corn-meal and milk (made up twice a day to insure its sweetness), with a little chopped, hard-boiled egg mixed with it, and some mashed potato occasionally. Chopped beef, flies, and spiders, should also be fed them, or if turned loose in the room, they will catch insects for themselves. Cherries and berries, especially Pokeberries, in their season, are much relished by the birds, and are a necessity to insure health. Regularity in feeding, and care, and cleanliness, are essential to success.

Mixed Corn.—"S.," Genyo, West Va., having corn with both white and yellow kernels on the same ears, inquires about planting this mixed seed, as these ears seem more solid than those bearing kernels of only one color. We do not believe in mongrels of any kind, and doubt if the mixed ears have any advantage in the way of solidity that may not be found in some established variety. Evenness in ripening is often important in the corn crop, and the two sorts in these ears may mature together or not. A field planted with this seed would have some stalks bearing all yellow and others all white ears, while many would be more or less half and half. If there was a week's difference in ripening, a part of the crop would be cut up too soon or too late. Besides, there is a chance of loss from imperfect fertilization—a matter we have not space to discuss here. We favor attempts to improve Indian corn, but planting mixed seed is not likely to lead to any good result.

The Illinois Horticultural Society.—The 23d annual meeting will be held at Springfield, Ill., on Tuesday, the 10th inst., and continue for four days. The programme is full and attractive, and rail-roads and hotels reduce their fares. Mr. O. B. Galusha is Secretary, and we would give him due prominence and thanks as just one Secretary who sends us the notice of a meeting in time for us to publish it. Re-elect Mr. Galusha.

Covered Milk-Pail.—The Dairy Supply Co., of New York, exhibit a milk-pail which excludes all dust and dirt from the milk. As shown in the engraving, its cover is somewhat hollowed, to make it strong, and is used as a seat for the milker. The funnel projects under the cow, and occupies a convenient position for receiving the milk; it is connected with the pail by a heavy rubber tube, so that if kicked by the cow, no damage is done; in the lower part of the funnel is a wire-gauze strainer which prevents any impurities getting into the pail. The result, with proper care otherwise, is clean milk; no danger of loss by the cow's putting her foot into the pail or kicking it over, and greater convenience



to the milker than the ordinary pail affords. This pail makes some amends for even a careless milker; but a lazy or slovenly man need not think that it will remedy the result of his sloth or carelessness, or give better milk.

Concrete Floors for Cow Stables.—"A. G. W.," Navarino, N. Y. Concrete floors are "a good thing for cow stables, where part of them are to be stanchioned, and part kept in box-stalls," or otherwise; but such floors especially require the use of absorbents, as fine earth, muck, or plaster, etc. The stanchions and partitions are fastened down by bedding them in the fresh concrete, or by drilling holes in it when dry. Gutters are easily made in the concrete, by laying down a "form" of the desired width and depth, and "puddling" about it. A good concrete may be made of 1 part cement, 1 part lime, 6 parts sand, and 4 to 6 parts of small pebbles. "An inexperienced man," who is handy with tools, knows how to make mortar, and has sufficient judgment, can lay such a floor. The surface is made smooth by levelling, pounding with a maul, and finishing off with a mason's trowel or other smoothing instrument.

Ratio of Corn-Stalks to Grain.—"B. S. N.," Washington, D. C. The relative proportions of corn-stalks to the grain depends on the soil, manure, variety, cultivation, and season, either one of which may modify the ratio—a tall, rank-growing variety has a much larger proportion of stalks than a small-stalked, many-eared sort. Rich, nitrogenous manure develops more stalks than grain; a wet season more; good cultivation reduces it, and poor soil and poor manuring give an undue proportion of stalk. We quote from several experiments, which show the range of the proportions:

Acres.	*Grain per Acre.*	*Stalks per Acre.*	*Lbs. Stalks to 1 Bush. Grain.*
16	75 bush.	6,000 lbs.	80
8	120 "	9,640 "	80⅓
—	82 "	8,240 "	100½
—*	34 3-10 "	5,122 "	149

* The average yield in Massachusetts, taken several years ago; the yield is larger now.

The above figures are all of northern corn; probably the western and southern varieties would show different proportions, though no more regular. Other estimates allow 1½ to 2½ tons for a 50 bushel per acre crop. The variety of seed and the treatment, which produce the smallest amount of straw for a given amount of grain, is the most desirable. Thoroughly dry corn-stalks can be baled the same as hay and straw, and not heat.

Bronze Turkeys.—"J. H. S." Logan, Ind. Bronze turkeys are the result of a cross of the wild turkey upon the black; or it may be that they are only the wild race domesticated. They are much larger than the common black variety, the male birds often weighing 30 or 40 pounds, sometimes more, when fully grown.

Pearl Millet in Canada.—A. Coindet writes that he procured of Wm. H. Carson (125 Chambers St., N. Y.,) the seed of Pearl Millet, and sowed it in a yard in Montreal. The soil was not manured, and the yard had the sun for only about two hours in the day. He sowed May 20th, and on July 15th, it being five feet high, he cut it; he cut again on Sept. 15th, the hight being six feet, and again on Oct. 1st, when the stalks were nine feet in hight. Mr. Coindet states that both his horses and cows were very fond of the millet, green or dry.

"Stock Breeding," by Manly Miles, M. D., late Professor of Agriculture in the Michigan State Agricultural College. New York: D. Appleton & Co. This work comes to hand just as our last pages are closing, and we can barely announce it, much less review it. A long acquaintance with the author and his enthusiasm in this specialty, his scientific thoroughness and conscientious accuracy, allow us to say that, whatever is stated in the work as fact, may be relied upon; and whatever is given as opinion, is sure to be honestly entertained. Sent from this office at the Publishers' price, $1.50.

Basket Items continued on page 481.

Letter From South Australia.

The editor of the "Australian Star," Adelaide, South-Australia, in an interesting letter to the editor of the *American Agriculturist*, writes: "In your July issue, you remark, 'The Australian farmer can by no means rejoice over his American brother; on the contrary, the latter may congratulate himself, that he is not the only, nor the worst sufferer, from small wheat crops.'—It is true that our average yield is small, for in 1875-6 it was $11^{57}/_{100}$ bushels, in 1876-7, $5^{24}/_{100}$, and only about 7½ bushels last season, but our farmers are far from poor. A man can purchase 1000 acres in South Australia at $5 per acre with nine (9) years credit. He has to deposit ten per cent of the purchase money, which sum is regarded as interest in advance for 3 years. With the aid of a South Australian invention called a Ridley reaper, which takes off the ears and leaves the straw standing, his wheat will not cost him $6 per acre. The farmer can, therefore, count as clear profit the value of every bushel in excess of 5 bushels to the acre. Late frosts and red rust spoilt the last harvest, and many farmers were obliged to cut their wheat for hay, while others, hoping to reap ten bushels to the acre, found the ears only half filled. The highest yield was 35

bushels per acre, the lowest was not worth securing. South Australia has secured the Grand Prize at Paris, for wheat, and is destined to be one of the greatest wheat-producing countries on the globe; we never had such good prospects of a large yield as we have now. Unfortunately, late frosts or red rust may again blight our hopes. Should your readers require any further information on wheat-growing in South Australia, you have only to ask for it and it shall be furnished."

Sundry Humbugs.

Here, at the close of the year, we find our humbug budget quite as large as, if not larger than, it was at the beginning, and we naturally ask ourselves if our work in this department has been productive of any good. We do not regard the enlarged correspondence in this line as indicating that fraud is on the increase, or more successful than heretofore. It only shows that our influence is extending, and as our exposures become more widely known, we are more frequently applied to by those who have received the proposals of swindlers, and those who, having been duped, wish to warn others. Had we not the satisfaction of *knowing* that our labors have been productive of good, we should not, as a matter of choice, continue these exposures. We do not find room to publish the many letters of thanks and appreciation of our labors that constantly come to us; indeed, we seldom make a journey of any considerable length without being personally thanked by persons for our efforts in this direction. Some swindles appear to have a short run, and are heard of no more; others are persistent and perennial, and continue, if not the same in form, the same in nature, year after year. We write no valedictories to our readers, as we assume that our present friends will continue, and bring some others with them; but the end of the year is a fitting time for calling attention to those leading forms of fraud that now prevail. Firstly,

THE FRAUDS UPON FARMERS,

which are much more frequent than is generally supposed, as the majority of the victims, ashamed of having been duped, "grin and bear" the loss in silence. Those who operate among farmers have a shrewd knowledge of human—we may say, farmer—nature. They know that farmers, who generally work so hard for what they earn, will look with favor upon a scheme which will allow them to make money both honorably and easily. Besides this they know that farmers, being generally honest themselves, are unsuspicious of others, and may be caught by methods that would not succeed with shopkeepers and others who are always on the look-out for some crookedness. We have often printed the injunction,

FARMERS, BE CAREFUL WHAT YOU SIGN,

and have wondered if there were no easy method of keeping it always before them. If our humbug column could so impress its importance, that every farmer, or other reader, would always, and habitually and carefully, read and understand whatever they put their names to, we should feel that our year's work had been attended with most useful results. Here is one of the simplest—and we regret to say, commonest—instances. Scene—a farm-house in Queens Co., N. Y. A glib-tongued chap comes in with a Patent Rest for a wagon pole or tongue—no rest, patent or other, for the *waggin' tongues* of these chaps—he convinces farmer that this is something every other farmer must have—in fact, can't live without; they have only to be known, to "sell like hot cakes," at $5 each; and as he, with the glib-tongue, must leave by next train, he will appoint farmer agent for the sale. Farmer does not know that he has made the same offer at the last house, and will do the same at the next. He thinks that the offer, half the amount, $2.50, on each one sold, is liberal for his share, and consents to become the agent. That there may be no mistake about the matter, farmer will please *write down his address*, in his book, so that the goods may come all right. A proper enough request, and the farmer writes his name very plainly. Days, a week, two weeks passed, but no wagon-pole things came. But something else came. Neighbor Blank, who lives up the road, called to see if it was convenient for the farmer to pay that little note. "Note!" He owed no note to any man living. Neighbor B. showed a note for $15, on demand, which, having the money doing nothing, he had bought at a slight shave of the wagon-pole man. Queen's Co. farmer could not deny the signature. In merely giving his *address*, he had signed a note which was all in legal form. When we hear of such cases every month, is not our warning needed? A similar case occurred in Calhoun Co., Mich., but here

THE FARMER OUTWITTED THE ROGUE.

We wish we had space for the wife's letter just as written, but it is too long. Wife is a careful reader of the *Am. Agriculturist*, especially the Humbug columns. Husband was disposed to make light of this, and boasted that *he* couldn't be caught signing a paper that he didn't know all about. Stump-puller man came along, induced farmer to become agent, offering large profits. Farmer told his wife that he had signed an agreement to become agent. Wife asked if he had read the paper. "No, he had not his glasses with him."—Wife told him that he had probably committed himself, and so alarmed him that he went off to the neighboring town, found stump-puller chap, declined being an agent, and stump-puller man pretended to cross off his name with much flourish. In a week two chaps drive up to the farmer's house, inform him that there are 25 stump-pullers at the depot to take away and pay freight on, and that they would collect pay for one ordered for his own use. Farmer denied sending for them—chap, to prove that he did, takes out a paper with a triumphant—"you won't deny your own signature, will you?" Farmer would examine his signature more closely, gets hold of the paper, crushes it in his hand, and tells them he would keep it. Chaps threaten penitentiaries, state prison and search warrants, but farmer holds on to the paper. Chaps call in the wife, asking her to reason with the husband—wife tells him if he has the paper to keep it. She told the chaps that she reads the *American Agriculturist*, which they didn't seem to like, and gave them a piece of her mind on swindling in general. They propose various compromises, but all are refused, and they at last depart with many threats. The wife writes that she thinks that a man who will sign a paper without reading it should be punished a *little*, for she found that he had signed an agreement that would have ruined them to comply with.... Inquiries about

THE SEMINOLE GOLD MINING CO.

continue to come. A sufficient answer to all these is found in our "Editorial Correspondence" on page 458. Certainly that should satisfy the most credulous. We learn that this swindle is taking considerable money from some of the Western towns in one dollar shares. In one flourishing town in Illinois a lady acted as agent for their sale. One correspondent sends a copy of a letter from an officer of this "hole in the ground company," in which he speaks of our remarks as "idle and malicious." We wonder how he likes those of the "Laramie Sentinel," quoted on the page referred to—that "does the thing up *brown*." One correspondent in Lynn, Mass., writes that he owns thirty-one shares, but does "not know for certain if they are honest or not." Why should there be such a fascination about a gold mine as to induce persons to invest in it blindly? ...The

"IS THIS YOUR SIGNATURE?"

letters of Clark & Co., who "adjust claims," continue to come. It is funny that the amount of "Mining Stock" is always an even $500. Of course these remarkable adjusters that adjust things, have a way of getting hold of genuine signatures, and this puzzles the writers thereof. We suggest that those who are at a loss to guess how Clark & Co. got possession of their signature, consider whether they have had, in the past, any correspondence with any "patent agency" in this city....It is with regret that we announce that

THAT COUSIN IS NOT YET FOUND.

This time it is H. P. Jones & Co. who are in the lost cousin business—though how a Co. can have a cousin, we can't understand. It is an old dodge, but may be new to some. "Jones & Co." use the singular pronoun; his letters inform people that, "In looking over your State Directory, your name attracted my attention"—"Jones & Co." reads directories—and very interesting they are; though the story is not altogether continuous. "A cousin of mine (*me* being J. & Co.), bearing the same name as yours, after the war, left his regiment, and we have not heard from him since."—Poor Jonesey & Co.! * * * "If you are my cousin" ("you will *not* have a strawberry mark on your left arm"—does he say?—not a bit, no sentiment about J. & Co., he means biz; he continues:) "I can do you a favor and you can help me"—"Jones & Co" is the agent of a lottery—circular enclosed—J. & Co. will enclose coz. a ticket good for any one of the drawings—we haven't the least doubt it is just as "good" for one as for another—"with this understanding, that I will arrange it so that you will draw a large prize, (who says that lotteries are not honorably conducted games of chance!) if you will act as agent for the sale of tickets. * * If you accept * * * I will arrange it so that you will draw the prize in next week's drawing." Then our long lost "cousin" gets, in a few days, a circular from W. P. McCall, notifying him that his ticket "has drawn an assorted lot of gold jewelry (45 pieces), valued at $160"—of course coz. has only to send and get his 45 pieces—not quite. "The percentage due for packing, shipping, etc. (especially 'etc.'), is $13.50." Who would be cousin to "H. P. Jones & Co.!" He is a very numerous cousin, he lives in ever so many States; Jones & Co. can arrange his ticket, but he can't get his stuff clear of that percentage. H. P., don't you think that there is a gossamer thinness about this "cousin" business?

"THE QUEER" OR COUNTERFEIT MONEY

humbug, is, with the exception of lotteries and quack medicines, the most venerable of all the swindles. It was sufficiently noticed last month. A recent feature is the circular of A. C. Chapman—and a very pretty signature you make, A. C.—who don't have any of "a certain queer class of money" himself, but he knows a chap—man who has some prime, "on the most liberal terms."

LOTTERIES OF ALL SORTS

are among the perennial nuisances, and come in so many forms that we have no space to specify them—those only who let them entirely alone are safe from the more fraudulent forms. These lottery chaps show skill in advertising. The "Commercial Gazette" is an innocent-looking paper. Its outside pages have some talk about angels, and a quotation from the "Christian Union," all as "sugar-coating," for the two inside pages are broad-side lottery advertisements. Yet these things, in spite of law, and the vigilance of post-office officials, go wherever the mail reaches, especially the Far West.

THE SECRET SERVICE NONSENSE

and other Cincinnati schemes seem to be very quiet. Whether that wonderful corps of detectives is full, or these don't subscribe to the "Gazette," or whatever the cause, it seems to have subsided. What, too, have become of those distinguished lamp people, and that remarkable "Art" distribution. It must be very dull in Cincinnati. Of course reference to some of the leading forms of humbuggery, must include

QUACK DOCTORS AND THEIR MEDICINES,

which are more numerous than any other. We have not space to enumerate or specify. Our advice to every one and all the time is, take no *secret* remedy whatever; do not give it to the members of your family; do not treat your domestic animals with any secret compound. and finally, have sufficient respect for our good Mother Earth, and do not desecrate her, by dosing her with secret fertilizers ...We would say to those who have been inveigled by promises of profit, to undertake the sale of quack medicines—no matter whether several "Barks," Bitters, Pills or Plasters; whatever contract you have made, the law will no doubt hold you to—no matter how worthless the stuff may be. Get out of the scrape as you can, for you may be sure that one who will work upon the fears of the sick, and hold out false hopes to those already beyond hope, in their lying circulars, will have no mercy on a well man. Do not write to us, for we cannot help you. A bargain is a bargain. At the same time don't mind threats. Isn't one of these quacks who assumes the Friends' language, and thee's and thou's, sweetly in his quack pamphlets, just threatening a little more than he can back up. The barks of some dogs are worse than their bites. We did not intend to specify any quack, but here is one too good to pass unnoticed. So

MAKE ROOM FOR SAGENDORPH

and his battery! S. is "offering to the public Batteries which are made of *newly discovered metals*." He need not add that they produce "results not less *startling* than *salutory*"—for his mere announcement is "startling" "newly discovered metals!" there must be at least *two* of them—and don't you know, Sagendorph, that *one* "newly discovered metal" is all that the greatest chemist in the world would ask as his passport to undying fame! But here are *metals;* Sag. we congratulate you. Your battery which is "constantly though imperceptibly impregnating the *Nerves* and *Blood* with new *Electric life*" is a battery that beats the telephone, microphone, phonograph or any other phone or graph ever invented.

Farming East—Farming West—Farming South.

A capital joke, upon himself, is doubtless remembered by many readers, of an editor starting an agricultural paper in a Western Capital town. In his first number, with 21 octavo pages of reading matter, he used two of them in urging people not to go East, but to take a home paper, "adapted to their own wants." The joke was, that of the other 19 pages, 16 of them were filled with matter prepared for and first published in the *American Agriculturist*, though less than half of the articles were credited. They were scissored from places where their paternity was omitted. This is an illustration of a good deal of nonsense uttered to help out somebody's

personal ends. There are a few special points of difference in the modes of tillage and harvesting, and in the crops grown in different sections of the country; but *the foundation principles of successful crop-growing, feeding, and marketing, are the same everywhere.* So are those of the mechanical appliances that now enter so much into the operations of profitable soil culture. We will not stop to illustrate here. This Journal has for twenty years circulated very largely all over the Western States, and largely at the South, and the testimony to its utility has been constant and great, though we have always ignored special attention to locality. (The largest circulation in proportion to population has usually been between Ohio and the Pacific Ocean.) But there are some reasons, just now, for our giving increased attention to the peculiar features of Western and Southern agriculture. *First*, the depressed condition of trade and manufactures in the older States is leading hundreds of thousands, or millions indeed, to look to the broad, unoccupied lands in the Western and Southern States, as inviting fields of labor, and future homes. We will try to aid them in their desire for more specific information.—*Second*, the demand, greatly on the increase, for meats, to be taken, alive or dressed, to Europe, makes the grazing and fattening of good stock at the West, as well as the East, especially at the West, and probably at the South, a subject of much importance now. *Thirdly*, it is our province to meet the wants of those who are at the West, and who think they need special and peculiar information particularly adapted to their work. This we shall look to. The truth is, our great American field is one in interest, and it will be our greatest pleasure to aid in developing every part of every section to the highest point possible.

We invite suggestions, queries, and information from all points, West and South, as well as East. Special editors or contributors residing in different localities will look after the special needs and information required in each section.

"To Do Good and Make Money."

Eight and twenty years ago the writer was in the Yale Laboratory, with Silliman, Norton, S. W. Johnson, Brewer, Weld, Willet, Safford, Shepherd, and other now distinguished men—all wrestling with practical chemistry, trying to find out what it could do, and what it could not do, for the improvement of soil culture. What it could not do, for there were wonderful hopes indulged then, by true, earnest, scientific men like Liebig, and more wonderful claims put forth by those who had a mere smattering of chemistry, especially those who had an ax to grind in the making and selling of fertilizers....One morning, a man came in to sell an Almanac, a good one, the title-page of which read: "Beckwith's Almanac," "*Published To Do Good and Make Money.*" That motto left upon the writer a strong impression. What higher motive for business enterprise and activity? He is a public benefactor, who makes two blades of grass grow where only one grew before, is a trite old adage, but it is a true one. All those who are laboring to this end, are doing a good work. Every man who helps get up and carry on agricultural societies, clubs and fairs, for disseminating information, is helping increase the blades of grass and the ears of corn. Every item of knowledge gleaned from meeting with others, from conversation, or from reading, gives a man new thoughts, and helps make his work more productive. Every man will be doing a good work who, this winter, helps diffuse information among his neighbors, by aiding in organizing farmers' conversational clubs, in circulating useful books and papers, etc. A few good books on farming, and Journals coming fresh from month to month, if circulated in any neighborhood, will have a grand influence, silent though it may seem and be, in developing thought, dignifying agriculture, improving practice, increasing products, and there will be a reflex benefit to him who helps in extending such influences. He will thus be "*doing good, and making money.*"—Our Publishers offer premiums, equivalent to money, to those who help increase the number of reading, thinking, cultivators. Those who work for these, will have a three-fold reward.

International Dairy Fair.

The importance of the International Dairy Fair, to be opened in New York at the American Institute building, 3rd Ave. and 63rd St., beginning Dec. 2, should attract the attention of all interested in dairy matters. If the exhibition equals the promise of the preparations, it will be worthy of the name it has taken, be a credit to the country, and result in substantial benefit to the industry. Several similar fairs have been held in Europe, with marked success. As competitors for European trade, American dairymen can not afford to neglect attending this exhibition, and learning what they can of improved methods and apparatus. The committees in charge comprise many of the leading dairymen, and the prizes offered are liberal enough to call out many exhibitors. The entries are numerous and important, many being from foreign countries. The classes include 8 of butter, 4 of cheese, and one of implements. The sum of $500 is also offered in premiums for dairy cows, including all the prominent breeds in use in this country. Altogether it is an occasion that should call out the milk, butter and cheese producers in full force; and even if the fair should be a failure, a result we do not anticipate, it will teach us how to organize one on a better, more successful basis.

Editorial Correspondence From the Far West.

The Seminole Gold and Silver Mining Co.

The comments of the September *American Agriculturist*, upon "The Seminole Gold and Silver Mining Co.," are greatly relished in Rawlins, Wyoming Ter., where the so-called "mines" are located. The talk on the cars and elsewhere, is to the effect that certain parties dug a hole in the ground, some forty miles from here, sufficiently deep to conform to the territorial mining law; they then organized a stock company, and have since been selling the stock in the Eastern and Middle States, in large and small lots; furthermore, that the whole head and front of the Company is one J. M. Pattee, who formerly ran a lottery at Omaha, Neb., and afterwards at Laramie, Wyoming, at which latter place his circulars were excluded from the mails, thus causing a cessation of his business. Whatever may be the truth of these statements, there can be no mistaking the meaning and intent of the following language which we find in the "Laramie Sentinel" of late date, an influential journal, originally induced to speak favorably of the enterprise: "A SWINDLE.—We are frequently receiving letters asking for information about the SEMINOLE GOLD AND SILVER MINING COMPANY. We can't answer these letters—there are too many of them. But we will state in the most public manner possible, that the Seminole Gold and Silver Mining Company, J. R. Brown, President, with headquarters at Rawlins, W. T., IS A PURE FRAUD, SWINDLE AND STEAL. J. M. Pattee, of lottery fame, is at the bottom of it. THERE IS NO MINE, NO MILL, NO MACHINERY THERE, and *never will be*, and every man who purchases stock in it, is merely *contributing to a lot of dishonest Dead Beats*, who are making their living by *gulling the public*. If any one has any doubts on this score, we refer them to the *Governor*, the *Judges of the Supreme Court* of Wyoming, or any other responsible party."

Big Mormon Crops.

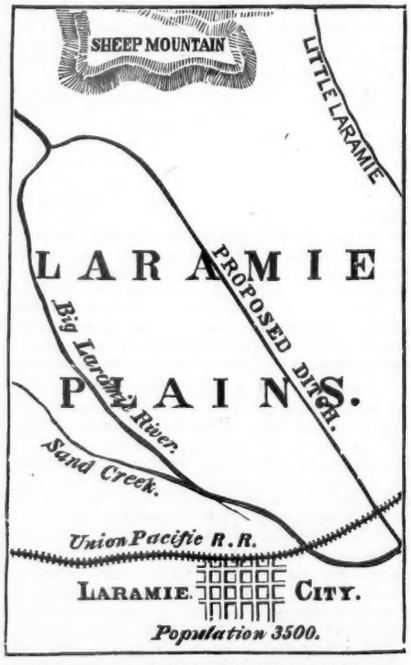
Wheat fields were frequently pointed out to us in Northern Utah, which had yielded, this season, from 50 to 55 bushels per acre, and we were shown potatoes of the "Peerless variety," raised by John Bowman of Uintah Station, Utah, which weighed from two pounds to two and one-half pounds each. The crops all through Utah, particularly in the Cache Valley, have been large this year.

Plenty of Game.

During the past few years, the far Western States and Territories have taken measures to preserve the game from the forays of unfeeling Nimrods who mercilessly slaughter wild animals either for the love of killing, or to be able to boast of the number of their victims. As the result of these protective measures, there is, this fall, a very perceptible increase in game, especially in Wyoming and Utah Territories. Employees of the Union Pacific Railroad tell us that they never before saw so many antelope on the plains, while back in the foot hills and mountain ranges, elk and deer are abundant. In riding, during the month of October, from Rock Creek to Laramie, antelope, wolves, mountain grouse, sage hens, wild geese, ducks, etc., were to be seen from the cars almost constantly. The favorite point for English hunters in this country is about seven hundred miles west of Omaha. Here they leave the railroad track, and strike back forty miles to the Sweet Water regions. Having procured a guide and spent a few days at the hospitable ranch of Mr. Tim Foley, who is one of the largest and most successful cattle growers in the world, they push on to the Wind River country northward, in quest of the larger game there is to be found in that region. A small party of these English gentlemen returned from the Wind River country, a few days ago, with twenty-one bear skins and the heads of numerous elk, mountain sheep, etc., which they were conveying to England as trophies of their American hunting excursion.

Irrigation in Wyoming Territory.

Of the one hundred thousand square miles of area in Wyoming Territory, it has been computed that over seventy thousand square miles are adapted for grazing purposes only. It is not improbable, however, that much more land may be brought under cultivation, so that Wyoming may be classed in the future as an agricultural, as well as a grazing country. The famous plains of Laramie contain nearly three million acres of grazing lands, over which are now scattered fully fifty thousand head



of stock. Some of the leading citizens of Laramie have organized themselves into an association for the purpose of irrigating and raising crops on that portion of the plains lying north-west of the city. The name of the association is the "Pioneer Irrigating Canal Co.," and the leading spirits in the work are Judge J. W. Donnellan, Rev. D. J. Pearce, Baptist Minister, Rev. H. L. Myrick, the Episcopal Minister, and E. Ivinson, Pres. Wyoming National Bank. The enterprise is not undertaken for money-making purposes, but has its origin in a desire to supply the city with farm and garden products, which are now brought a long distance by rail from the States at considerable expense and trouble.

As will be seen from the accompanying illustra-

tion, a ditch is to be dug, fifteen feet wide, three feet deep, and thirty miles long, beginning at a point on the Big Laramie River, thirty miles southwest of the city, near Sheep Mountain, and extending to the same river at a point a short distance north of Laramie.

From the main ditch, secondary ditches are to be dug, by means of which fully fifty thousand acres of land west of the city, lying between the river and the main ditch, will be irrigated and brought under cultivation. At present, this tract is an open plain, dotted here and there with ranches and droves of cattle and sheep. The cost of this system of ditches is computed at from ten to fifteen thousand dollars. The engineer, Mr. F. C. Avery, who has superintended similar irrigation enterprises in Colorado, is sanguine that it will be attended with fully as successful results, notwithstanding the plains here are considerably higher than in Colorado. The citizens who are to bear the expense of this ditching system, are now locating whole sections of land within the proposed area, under what is known as the "Desert Act or Law." Any one has a right, under this Desert law, to appropriate six hundred and forty acres of desert land at $1.25 an acre, by paying 25 cents per acre cash, and an addititional $1.00 per acre within three years' time, upon furnishing proof of his having reclaimed the land by irrigation. Furthermore, a revenue will accrue to those who supply the funds, from the sale of the water rights. The right to draw water enough to irrigate one hundred and sixty acres, is worth considerably more than the original cost of the land. At Fort Collins, in Colorado, this right is valued at from $800 to $1,000.

This particular valley, extending from the Medicine Bow River to the head of the Laramie Plains, and being about one hundred miles in length and fifty miles in width, is specially adapted for irrigation on account of the numerous water courses. The Big Laramie winds about through the valley for over one hundred miles, and the North Platte River, the Medicine Bow, Rock Creek, Dutton Creek, Little Laramie and other streams, flow through it. Should this first attempt at irrigation by the citizens of Laramie, meet with the predicted and anticipated success, it will undoubtedly be repeated on a large scale all over the plains.

During the past summer, potatoes, peas, and other vegetables have been successfully raised here, in the gardens of Laramie by means of the irrigation afforded through a copious spring just east of, and 200 feet higher than, the city.

Fish Culture in the Far West.

There is no industry which promises more liberal returns upon the investment than the propagation of fish in the far Western States and Territories, where there is a great scarcity of this kind of food. An enterprising fish breeder, who would construct ponds and raise superior kinds of fish for the market in either Colorado, Nebraska, or Wyoming, would be certain to realize very handsomely on his outlay. The prairie regions being subject to surface flowage every year, ponds should be constructed as remote as possible from points liable to overflow. In building them, care should be exercised to secure the cool healthful waters from the mountain streams. The nearer such ponds are to the foothills or mountain slopes, the better.

With the exception of mountain trout and some other fish, the supply in the far West is brought from the lakes and other remote points. Such fish are naturally expensive and not always so fresh and wholesome as might be desired. From inquiries made on the ground, we are satisfied that there is a demand here for fresh fish, in the supplying of which lies a fortune for enterprising fish culturists. Owing to the abundance of beef, the demand for fish as a change of diet is very general.

Kansas—Recent Immigration.

Kansas is smiling with prosperity, and her people are cheerful and happy over the improved condition of affairs. In travelling through the entire State, visiting the agricultural centres, the cities, villages, and other points of interest, I have heard but one expression of opinion, viz.: that hard times are over and prosperous times have come again.

The immigration into the State for the year I compute at one hundred and five thousand, basing my figures upon conversations I have held with the leading authorities, including the Governor, the State Board of Agriculture, and the various Railway Land Commissioners. While portions have been distributed through the eastern counties, the great bulk of this immigration has pushed on to the central and western counties, following the railway routes across the State. The sales of the Atchison, Topeka, and Santa Fe Railroad for the ten months ending with October, were 208,626 acres, as compared with 57,439 acres for the corresponding period last year. The sales of the Kansas and Pacific for the ten months were 182,000 acres, and the estimated sales for November were 20,000. In addition, there are the very large amounts of Government lands sold, preëmpted, etc., of which no official aggregate data have yet been made up.

Prior to 1871 there were no settlements one hundred miles west of Topeka. During the years that have intervened since then, one hundred thousand people have moved into the region beyond upon the lands tributary to the Kansas Valley, as far as Fort Dodge. This population is scattered over an area of two hundred miles in length, and an average width of seventy-five miles. It lies about 37 miles each side of the Atchison, Topeka, and Santa Fe Road. The immigration is likewise following westward with similar rapidity on the line of the Kansas and Pacific Road. Saline County, for example, which ten years ago was roamed over by the buffalo, this year produces a million and a half bushels of wheat. Ellsworth, one hundred miles west of Salina, which, in 1868, was the happy hunting-ground of the Indian, has this year raised from twenty to twenty-five bushels of wheat per acre.

Changes in the Climate.—The Crops.

The rapid climatic changes are converting barren into good arable land, and it is now thought that in five years' time, good crops can be produced at Fort Wallace, 235 miles west of Salina, where the country is now seemingly a desert waste. The long, blue-joint, or prairie grass, is moving westward at the rate of five miles annually in advance of the population. It grows from two to three feet high, and serves to protect the soil from the direct rays of the sun, and after a rain storm, answers as a mulch, in preventing the ground from becoming hard and dry. On one section of land in Elk County, where eight plows were "disabled" in endeavors to break up the ground a few years ago, good crops are now being raised. Although the rainfall has not increased so much as has been generally supposed, it has increased very materially. Rain, falling upon broken ground, remains much longer than when falling on hard, dry soil, so that the extreme dryness experienced ten years ago, is not now felt in Kansas. Should Western Kansas and Eastern Colorado, included in what has hitherto been known as the Great American Desert, be ultimately brought under cultivation, it would certainly be a matter of general interest, as indicating what climatic changes man can accomplish in a sterile land.

The inhabitants of the eastern counties express considerable dissatisfaction because the people coming into the State, push on beyond them. They claim that the impression among them that their counties are burdened down with bonded and other debts, is not borne out by the facts; furthermore, that just as good lands can be purchased in the eastern counties at as cheap, or almost as cheap rates, as can be had in the middle and western counties hundreds of miles further west. Governor Anthony and other prominent men in the State, interested in its welfare, have stated to me that the people of Kansas do not sympathize with any "philanthropic" or other movements in the Eastern and Middle States for transferring a dependent population to Kansas, where there is room only for those who can take care of themselves.

The crops of Kansas have generally shown a fine average yield. The wheat crop has been the largest ever raised in the State. The oats have been good, and potatoes very good. Corn was affected by the dry weather. A large crop of broom corn has been raised this season. The following tables indicate the quantity of Kansas cereals as compared with last year. The figures for 1877 are official, as likewise are those for this year (1878), furnished me by the Hon. Alfred Gray, Secretary of the State Board of Agriculture, whose well known thoroughness is a sufficient guarantee for their accuracy.

Kansas Crops.	1877.	1878.
Wheat.....	14,316,705 Busb.	33,315,358 Busb.
Corn.....	103,497,831 "	89,324,971 "
Oats.....	12,768,488 "	17,411,473 "
Rye.....	2,525,054 "	2,722,008 "
Barley.....	1,875,323 "	1,562,793 "

These returns of the crops for this year, are based upon the monthly reports which the county officials are required by law to make to the agricultural authorities of the State. A portion of this correspondence, describing the great Texas Cattle Drive, is given on page 450 of this number.

Science Applied to Farming.—XLVII.

Fish as Food for Animals.

"The cattle at Provincetown feed upon fish with apparently as good relish as upon the best kinds of fodder. ....We have seen the cows at that place boldly enter the surf, in pursuit of the offal thrown from the fish-boats on the shore, and .... masticate and swallow every part but the hardest bones. A Provincetown cow will dissect the head of a cod with wonderful celerity. She places one foot upon a part of it, and with her teeth tears off the skin and gristly parts, and in a few moments nothing is left but the bones....It is said that some cows there.....will, when grain and fish are placed before them,.....eat the whole of the fish before they will touch the grain."....*Barnstable (Mass.) Journal, Feb. 7, 1853.*

We have accounts of the feeding of fish to stock in the East, centuries ago. It is a regular practice in northern Norway, where dried codfish are used to piece out the stock of hay that does not suffice for the long winter. In 1856 Prof. Stoeckhardt, of Saxony, received a sample of Norwegian fish-guano, which he fed to a half-year-old pig "which did exceptionally well on this northern food."

Experience of Farmers in Maine.

The same practice prevails on our Atlantic coast, particularly in Maine. The Maine Agricultural reports refer frequently to this use of fish-pomace, or fish-scrap, the material which, when dried and ground, makes fish-guano. Mr. W. D. Dana says:

"Fish pomace, or the residuum of herring after the oil is pressed out, is greedily eaten by sheep, swine, and fowl; and probably pogy [Menhaden] chum would be eaten as well. Smoked alewives and frost fish also furnish a food palatable to cattle. Sheep thrive well, get fat and yield heavier fleeces when fed on this pomace than when fed on anything else produced in this section of the State. Careful and observing farmers who have fed it, assert that it is of equal value with good hay, ton per ton, and that its value for manure is in no degree diminished by passing it through the living mill, and thus reducing it to a much more convenient state for applying. If it could be sufficiently dried, without other substances, to prevent putrefaction, it would form a valuable article of cattle feed in regions from which it is now excluded by the expense of transportation and its own odoriferous nature."

Mr. M. L. Wilder says of his experience in the use of scrap as a food for sheep: "I believe fish offal to be not only cheaper, but much superior to any other kind of provender I have ever used for this purpose. I keep about one hundred sheep, and have fed fish offal to them for the past ten years. The offal is made from herring caught in weirs, salted the same as for smoking, cooked, and the oil pressed out, leaving a pomace for which the sheep are more eager than for grain. For the last three winters I have kept my sheep on threshed straw, with one-half pound of dried fish-pomace per day to each sheep, or one pound of green (as it shrinks one-half in drying), and they came out in the spring in much better condition than when fed on good English hay with corn. I consider the dry pomace worth as much as corn, pound for pound. When I have had enough to give them one-half pound per day, I have found that the weight of the fleece was increased one-quarter, and not only that, but also the carcass in a like proportion; the weight of the fleeces per head averaging from five to seven pounds."

Why Fish are Nutritious.

Fish and fish refuse consist essentially of flesh, oil or fat, and bone. The fleshy portions, which contain nitrogen, are similar in composition to lean meat and to the albuminoids—gluten, fibrine, etc.—of plants. The fish oils or fats, too, are essentially the same as those of hay, corn, oil-cake and other vegetable foods. The bone contains albuminoid matter; "gristle" is quite digestible and nutri-

tious, and phosphate of lime, which, though greatly in excess of the needs for food, does no harm. The albuminoids and oil are especially valuable in fish, because (1) they are more easily digested than in most vegetable foods; (2) they supply in concentrated forms just what poor foods, such as straw, corn-stalks, and marsh and late-cut upland hay, lack. These latter are inferior to early-cut hay or grass, not merely that they contain less nutritive materials, but especially because they have not enough albuminoids and fats. Hence the utility of feeding oil-cake and cotton-seed meal with poor hay, corn-stalks, and straw. Oil-cake and meal were formerly used for fertilizers, until farmers found they were excellent fodder, and that what was not made into flesh, fat, bone and milk in feeding, was worth more for manure, because in more available forms than before it had been pulverized and decomposed in passing through the animal. There is no reason why the same should not be done with fish refuse, except the difficulty of making it palatable, and this obstacle is not hard to overcome.

Experiments with Fish for Fodder.

The earliest accurate experiments on fish as food for animals that I have seen, are reported by Mr. Lawes, of Rothamsted, England, in 1853. Various foods, including bean, maize, and barley meals, and dried Newfoundland codfish, were tested. Mr. Lawes says: "In the two series....where we have a comparatively small amount of non-nitrogenous matter consumed, the food consisted, in a large proportion, of the highly nitrogenous codfish; and in both of these cases we had not only a very good proportion of increase to food consumed, but the pigs in these pens were very fat and well ripened, and hence a large proportion of their increase would be real dry substance....This result is, in itself, interesting; and it may perhaps point to a comparatively greater efficiency in the already animalized protein compounds [albuminoids] supplied in the codfish than in those derived, as in the other cases, from the purely vegetable diets."*

The high cost of grain foods in Europe—farmers there have to look to Russia, India, and America for their supply of oil-cake,—has led the German Experiment Stations to examine the question of the value of animal foods, scraps, dried blood, and fish as a substitute. Numerous feeding trials have been made with sheep and swine, to test the digestibility of dried flesh, blood, and Norwegian fish guano, and their nutritive value, as compared with vegetable foods such as pea-meal, oat-meal, and potatoes. The animals were fed during different periods of two or three weeks each, with different foods and mixtures, and careful weighings made of both food and excrements. Each series occupied several months, and was made with an amount of labor and accuracy that would be simply astonishing to most farmers in this country. Wolff found sheep to digest 92 per cent of the albuminoids, and 97 per cent of the fats of *flesh*-meal, and concluded, with Wildt, that animal albuminoids and fats may serve just as well as vegetable for fodder. From several trials with sheep, Weiske and Kellner conclude that fish-guano may be fed with profit. At first the animals did not relish the fish, but when mixed with oat-meal they accepted and soon got to eating it clear very greedily. They digested 90 per cent of the albuminoids and 76 per cent of the fats of the fish. It is agreed that these animal foods are as nutritious as the most concentrated vegetable foods. A large number of farm trials in different parts of Europe bring the same result. An accurate experiment by Professor Farrington, of the Maine State Agricultural College, leads to like conclusions.

On the whole the testimony is unanimous as to the high value of fish guano as food for sheep and swine. There is no reason why it should not be equally good for neat cattle, particularly young stock. One important element of the profit from such foods is the manure. The transformation of fish by birds into Peruvian guano makes it more soluble, and worth more for manure. Kellner found that the same is true when fish is fed to sheep.

To make meat-scrap, dried blood, or fish most profitable for feeding, the first point is to get a wholesome product. This can be done by proper preparation. Common salt, or, perhaps, better, German potash salts, would aid to this end, and increase the value of the manure. The next point will be to feed them with poor hay, straw, and corn-stalks, and thus save the better hay for use where it is most needed. By such economizing of fish wastes millions of dollars may be saved to the farmers of the country.

W. O. ATWATER.

Wesleyan University, Middletown, Conn.

* Journal of the Royal Agricultural Society for 1853.

How to Tell the Age of Sheep.

In buying or in selecting sheep for keeping or fattening, it is important to know their ages; this can be easily and quite accurately determined by

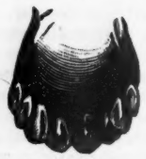


Fig. 1.—3 MONTHS.

Fig. 2.—12 TO 18 MONTHS.

examination of the teeth, and there is no other way of getting at the age with any degree of certainty. Sheep, like cattle, have no upper front teeth, but the gum is hardened into a tough pad. The lamb, at birth, shows but two incisor teeth, often none; but in about 25 days the full set of 8 "milk teeth" has appeared, and at 3 months the "dental arch" (the front teeth) is full and round, as in figure 1. Between a year and 18 months the two middle milk teeth are replaced by broad permanent ones, as indicated in figure 2. Towards the age of two years,

Fig. 3.—2 YEARS.

Fig. 4.—3 TO 3½ YEARS.

the teeth next on each side of the middle drop out and their place is taken by broad teeth, as shown in figure 3. At this stage the jaw shows four broad teeth in the middle and two narrow ones on each side. Figure 4 shows very nearly how the teeth look at 3 to 3½ years old, there being two more broad teeth, or 6 in all. Now the last remaining milk teeth are so small as to be hidden behind the broad ones, and scarcely visible, when looking at them on a level and in front (fig. 5). At 4 to 4½ years these last milk nippers are replaced by the permanent ones (fig. 6); but not until 5 years or after do they attain full size. After this age the teeth gradually wear away, and at nine years are much worn, as in figure 7.

Fig. 5.—FRONT VIEW OF FIGURE 4.

There is considerable variation, however, in the teeth, according to breed of the sheep and the way in which they are kept, but a little practice will enable one to estimate their ages quite accurately.

Fig. 6.—4 TO 4½ YEARS.

Fig. 7.—9 YEARS.

An illustrated chart has recently been published, giving the ages of the horse, cow, sheep, pig, and dog, that is of great value to farmers, every one of whom might recover its cost many times a year by its use. It is an instructive, attractive and valuable chart to post up in the stable or office.*

* "Chart of the Age of the Domestic Animals." Published by Orange Judd Company. Price, $1.00, by mail.

More Pleasant Figures to Read.

"We owe a *Thousand Million Dollars* to foreign countries for money borrowed to carry on the war, to build railroads, and for articles imported for use and consumption here," was the statement only three or four years ago, and the actual amount of indebtedness was even greater. At least sixty million dollars had to be sent abroad each year, to pay the interest on this sum. What more pleasant reading, than to learn that, while supporting ourselves, and even reducing the aggregate of home indebtedness, individual, municipal, and national, our people are rapidly wiping out this foreign debt by economy in luxuries and in the expenses of living, etc., and by producing more and more to send to other lands—by increased effort, by developing the agricultural resources of our great country, and by the blessing of Providence in giving us magnificent crops.....In the *American Agriculturist* for September, we showed that during the year ending July 1st, our country exported of its products $261,744,579 more than we imported; in two years, an excess of $428,284,596; and in five years, **$657,218,495.** In our October number, we presented the figures showing that from Aug. 1866, to Aug. 1878, we had reduced our National interest bearing debt, $571,852,395 (or from $2,381,530,291, to $1,809,677,900), and our annual interest payment in the same time, from $150,977,698 to $95,181,007, an annual saving of nearly $56,000,000; and our annual taxation from $488,274,465, to $240,753,305, or more than half.

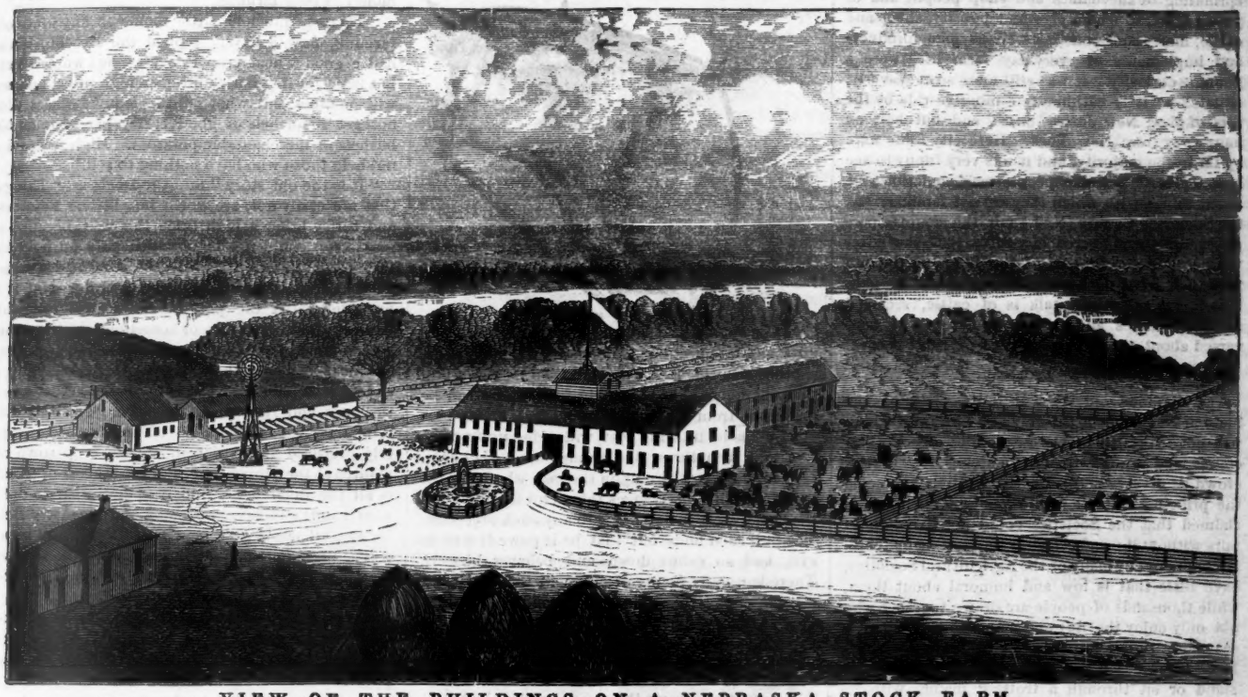
The good work still goes on; our former figures were made up to June 30. We now have the official statistics to Oct. 1st. Exclusive of specie, the exports during September were $57,924,808, and the imports only $37,399,541, a gain during the month of over Twenty Million Dollars ($20,525,267). The total exports from January 1st to October 1st, 1878, were $533,729,118; the imports during the same time, were only $324,598,631, a *gain* in 9 months of **$208,808,527.** At the same time, the large products of our gold and silver mines are being retained in the country, by so much not only increasing our solid wealth, but adding to the reserve for resumption of specie payments. The yield of the mines for our last fiscal year was about $94,000,000, or $46,226,106 of Gold, and $46,726,214 of Silver. (About $2,500,000 of gold and $3,000,000 silver are consumed in the arts and manufactures. The total stock of gold and silver in the country July 1 was estimated at $332,443,947, an increase of about $90,000,000 during the year, to which $26,000,000 was added from the mines from July 1st to October 1st.)

The un-official reports show that the gain is still going on, though temporarily lessened a little in October by the Scotch Bank failure and consequent financial disturbances in Great Britain, which, for the time being, checked orders for breadstuffs. The business is reviving again now. Great Britain has still large requirements for breadstuffs, with extraordinary small supplies to come from Hungary, India, and Australia. From Jan. 1 to Sept. 27, British India exported only 1,193,706 bushels of wheat against 10,485,158 bushels in the same time last year. France is also a large buyer this year, her imports of wheat during September alone being 2,339,520 bushels this year, against 638,824 bushels last year.—The cotton crop is the largest ever produced in this country, and despite the retardation by yellow fever, which has now happily disappeared, the exports in ten weeks from Sept. 1 were this year 493,887 bales against 341,751 bales during the same period in 1877.—

Surely there is a hopeful outlook for all classes. While very high prices for corn and wheat can not be expected, it is satisfactory to learn that there will be a demand, at some price, for all the immense products of the past two harvests, so that the country will be cleared, and a demand exist for the next year's harvest. Our agricultural readers can with hope and confidence lay out their plans during these leisure winter days for putting in a good area of spring crops. Let them not forget that the best *paying* crops are those in which the largest yield is obtained from the smallest area. We will do our share in showing how this is to be accomplished.

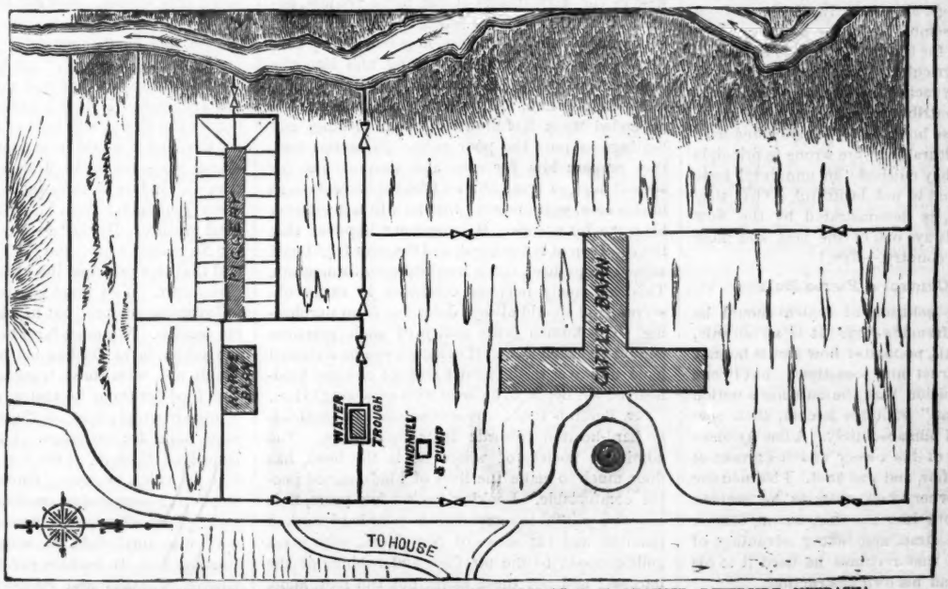
A Nebraska Stock Farm.

Our associate, who is now in the West, thinking it would interest farmers elsewhere to see how those who are occupying the newer States arrange their buildings and lay out their farms, selected as a typical example, the stock farm of T. H. Leavitt, Esq., at Riverside, Nebraska. This seemed to be so beautifully situated, as well as carefully planned, that he sends a ground plan of a portion of the estate, which will give a better idea of the relative positions of the buildings, yards, etc., than would the general view alone. This view, from sketches and photographs, was taken from a point opposite the lower right-hand corner of the plan. The following is a brief history of the estate, which is situated three miles southwest from Lincoln.



VIEW OF THE BUILDINGS ON A NEBRASKA STOCK FARM.

In 1865, thirteen years ago, an enterprising young man from Michigan located on this spot. Within a range of 5 or 6 miles, where now there is a population of well nigh 10,000, about a dozen others had made similar claims of Government Land. At that time, a band of Pawnee Indians, 300 strong, were encamped just west of them, and deer, antelope, wolves and other large game were abundant. Six years later, the property passed into the hands of a Vermont farmer, and the present proprietor is a Massachusetts' man; the original pioneer owner being now a Government officer at Washington. The farm comprises 250 acres. The stock, aside from work teams, consists of about 250 Berkshire swine, some imported, but mostly home-bred, though all of choice families and pure blood. There are about as many sheep, Cotswolds, beautiful animals; and about 250 head of cattle. Of these, upwards of 50 head are Shorthorns of pure blood, selected with care from noted herds in Canada and various States, from Massachusetts and New York, to Missouri and Colorado. The noble bull, "7th Baron Morley, No. 18,954" (pure Princess), which stands at the head of the herd, and several of the females, were bred in the State of New York. The buildings are substantial and commodious, neat and attractive in style, and arranged and fitted with every convenience for the thorough, economical, and profitable prosecution of the stock business. The product of the dairy for the past season has been about 20,000 lbs. of cheese, of quality which compares favorably with the product of our best eastern factories. The region is well settled, highly cultivated, and well stocked. The last wolf about here was killed in 1876. Prairie Chickens, Plover, Quail, Wild Geese, Ducks and Brandt, in their season, are still abundant. Building material is here somewhat more expensive than at the East, but can hardly be rated high, while labor of all kinds is low. Feed for stock is very low; hay at $1.25 to $2.50 per ton; corn, 15 @ 20c. per bushel, and other things in proportion; while the products of the dairy, the stable, and the pens, command very nearly eastern prices. The brief narrative of this farm and the facts we have given, may serve to show that the West has substantial attractions for eastern men and eastern capital, no less than that the East and West have common interests which are worthy of more consideration than we are able to give them in this place.



PLAN OF THE BUILDINGS, YARDS, ETC., ON THE STOCK FARM OF T. H. LEAVITT, RIVERSIDE, NEBRASKA.
The principal buildings are designated. The pens in the piggery open into small yards, which communicate with the larger yards at each side. In front of the barn is a fountain, surrounded by a fence and forming a circular yard for calves.

Time to Select Breeding Stock of Poultry.—The surest way to get good healthy chicks, and the best eggs for setting, is to select the breeding stock early in the season, before they are mature. A flock selected in November, and given quarters where they can choose the house or open air at will, growing up together and naturally drifting into productive life, are always found to produce the best progeny, being more even in type and color. With such timely selection, and care in the feeding not to let the stock get too fat, nor on the other hand too poor in flesh, are among the secrets in securing fine chickens. The breeder must have perception enough to know when his fowls are over or under fed. Old and young poultry should not be cooped together, as food sufficient to keep the young, growing pullets in a laying condition, would so fatten the old ones that they would lay but little and perhaps not at all.

Among the Farmers.—No. 35.

BY ONE OF THEM.

At the Agricultural Fairs.

The most pleasant fairs are those at which there is a mixed attendance of city and country people. At Elmira, for instance, there was a considerable sprinkling of mechanics and shop people, and of young folks, to whom pigs and poultry, sheep and cattle, mares and colts, as well as many products and implements of every-day farm life, were a genuine curiosity. It was still more so at Waverly, situated as it is within a few minutes ride by the cars of *four* New Jersey cities, and but half an hour away from New York. Here city folks were by far in the majority, and it was very funny to see how "green" sensible people may sometimes be about things with which they are not familiar. At the Somerset County (N. J.) fair the country people so far outnumbered city folks, that the latter were lost in the crowds of the tillers of the soil with their wives and sweethearts. And I am sure that the beaux whose talk is of cattle, received as many smiles and favors, as those who conversed about the picturesqueness of rural scenes.

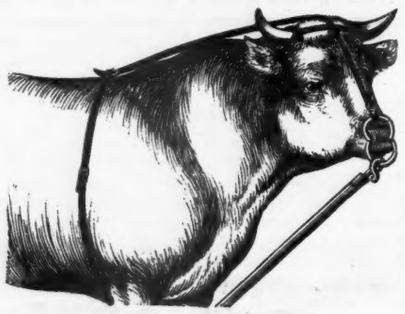
Horse Trotting.

The dignified old Agricultural Society of the State of New York is the only one I know of which will not make use of the attractions of a trotting course, and regular trotting matches to "draw a crowd." Everywhere else the trotting course is the principal attraction. I do not like it, but it is claimed that the Societies could not live to hold fairs without it; and certainly the trotting matches, as conducted by many of the Agricultural Societies, have little that is low and immoral about them, while thousands of people are drawn together who not only enjoy the day and one another, but who see and learn much that is very useful and interesting. Hundreds never have time or inclination to stand or sit through a trotting match, with its vexatious delays, disappointments at a favorite's failure to win, and enjoyment of victory. Still, a good many people seem to enjoy it. Let them—the horses certainly enjoy it, the drivers are in a high state of pleasant excitement, while the judges are the only ones that seem not to have a good time, and even they have the satisfaction of sacrificing themselves for the general good. The money that pays the premiums and salaries—if salaries be paid—that cares for the grounds and erects tents and permanent buildings, all, or nearly all, comes from the people who assemble to see the trotting. It is a great deal better for the money thus to come into the treasuries of Agricultural Societies, than to swell the profits of purely racing and trotting associations. [We allow our Contributor to express his views, but we believe these horse-races, sugar-coated with the name of agricultural fairs, are wrong in principle and tendency. They cultivate an unnatural taste for horse-racing that is not healthful. That they are not necessary, is demonstrated by the New York State Fair, always one of the best and most useful held in this country.—EDS.]

How to Control a Fierce Bull

is a problem, the solution of which should be familiar to every farmer's boy. It is an old rule, never to trust a bull, no matter how gentle he may be. We have to trust him sometimes; but if one has the least suspicion that the bull has a notion "to try conclusions" with his keeper, then it is rash not to control him absolutely. A fine Ayrshire bull got the better of his owner and his groom at the New England fair, and was shot. I learned the story from his owner: how that, as he seemed quiet, he was led out into the ring, among others, without his check strap, and taking advantage of his freedom from that restraint he used it to his groom's sorrow, and his own destruction.

A check strap for a bull is a simple strap of good leather, fastening by a snap into a ring in the bull's nose, passing between his horns, where it is held in place by a strap going around them, and back to a leathern girth, to which it is buckled. The animal is led and handled by a second ring. He can not get his head to the ground, and is consequently unable to do mischief, and perfectly manageable. I have had occasion a few times to lead a bull of two or three years old through or across the city of New York, and have done so with comparative safety by putting a girth about the body, then attaching a stout cord like a clothes-line to one or both forefeet at the pastern, passing it under the



CHECK-STRAP FOR BULL.

girth and letting it be held by a man behind, while another lead the bull by a staff. So long as a bull thus encumbered goes straight forward, he can be prevented from running or going fast, for a vigorous pull as he lifts his feet will bring up first one foot and then throw the animal upon his knees. He can, however, turn upon the man who holds the cords, and this disarranges things for a while. But the check strap is not liable to any such objection. The bull soon finds out that he is powerless to do evil, and so calms down and behaves himself. There is usually plenty of space in the hole in the septum of the nose to insert a second ring, and the two rings may be left in without inconvenience to the animal. It is represented in the engraving.

Apoplexy in Horses Induced by Fright.

A horse trader came through the village last week and made an exchange with a man who contracts to dig cellars and haul stone, etc., the contractor taking a horse on trial for three days, and agreeing to pay some $25 to boot. The horse was set to work, and every one noticed how nervously he started at the word, and how hard he pulled. Suddenly he fell back and died. It was a clear case of apoplexy, or a bursting of a blood vessel in the brain. The cause was a mystery until some one, wise in the dark doings of the horse traders, explained it. He says that when these base fellows get in trade a dull, nerveless, lazy horse, they cure him for the time being by taking him into the woods or other secluded spot, and there by whipping and yelling at him, making him pull as if his life depended upon it, followed by such lashings and beatings as puts the poor animal in mortal fear, they prepare him for sale, and warrant him for several days, or leave him on trial for three days, as in this case, well knowing that he will not get over his scare for a week. It sometimes happens that the excitement is too great, and the poor frightened animal drops dead, and is freed from his tormentors. This extremely nervous condition is easily observed, and should always deter one from purchasing. The human brute guilty of such practices should be watched, and if evidence can be obtained hand him over to the tender mercies of some kind-hearted Mr. Bergh, to be dealt with according to law.

Mr. Bergh is tender towards animals, but judicially hard-hearted towards their tormentors. The admirable Society of which he is the head, has done much to make the lives of kind-hearted people comfortable. Looking back a few years, it is easy and painful to remember the poor hard-worked omnibus and car-horses of New York, with great galls exposed to the air, flies, and rubbing of the harness; and not these alone, but the halt, lame, and sick beasts that were made to do regular work, sometimes falling under their burdens, and often dying in the street under the blows of their drivers. How things are changed! and it is all Mr. Bergh's doings; and though he has doubtless erred sometimes, it has been on the side of mercy to the beasts.

Talks on Farm Crops.—No. 22.

By the Author of "Walks and Talks on the Farm," "Harris on the Pig," etc.

"The truth is, Deacon, we must farm better. I have no heart to talk about farm *crops*. We must talk more about the preparation of the land,—about draining, cultivation, and manure. There is no money in poor farming."

"There is precious little money in any kind of farming, now a days," replied the Deacon, "we had a good wheat crop this year, but we can get but little for it. Barley brings a high price, and so will potatoes, but what of it? Many farmers did not get 10 bushels of good barley per acre, or 50 bushels of merchantable potatoes. High prices do not help those who have nothing to sell."

"It is the old story" said the Doctor. "Things that are easily got, are worth but little. Potatoes and barley bring a high price this year, because a good crop could not be obtained only on land in the best condition. We say the season was unfavorable. The Hessian fly hurt the barley, and the bugs defoliated the potatoes. And yet you will find on adjoining farms, or sometimes in the same field, a good crop of barley, of 40 bushels per acre, and near by a crop that is hardly worth thrashing; and so with potatoes. Now, *the season* is the same, the bugs and Hessian fly the same. The only difference is, that the one piece of land has been properly prepared and enriched, and the crop sown or planted at the proper time, and the others not; that is all the difference. And it is not wise to fold your hands and say, 'we had a bad season.' Better say, '*it would have paid me well if I had spent a little more time and labor and money, in making the land dry, clean, mellow, and rich.*' What you want is more faith in your business."

"That is the point Doctor," continued I, "you have hit the nail right on the head. Experience and observation, prove that the only farming that pays in the long run, is good farming. I have a field that this year has produced 250 bushels of potatoes per acre. And on either side of it is land that produced less than 50 bushels."

"You have no reason to complain," said the Deacon, "you have the best crop I have seen this year, and at a dollar per bushel, your potatoes will pay you better than any other crop you raised."

"If I had farmed better, I should have found it decidedly profitable. My good crop was on a field that is thoroughly underdrained, and which I manured this spring. *And the extra yield of potatoes will pay for all the draining, for the manure, for cultivation, and for the land itself.*"

"You want to prove," put in the Deacon, "that we must drain our land and make more manure or buy artificials. I should agree with you if it was not for the cheap, rich land of the West. Freights are low, and it would seem pretty risky business to spend more money in draining 10 acres of land than we can buy 50 acres for in the West; and then every year spend from $10 to $15 an acre for artificial manure. Better 'go West, young man.'"

"No matter where you go," I replied, "you will find that this principle lies at the basis of profitable agriculture. You must get good crops—not only in favorable seasons, but in what we call unfavorable seasons. We must farm better. We recognize the principle in feeding cattle, sheep, and swine. We do not, with these, trust to 'nature.' We provide food for them in winter, and see that all their wants are supplied at all times. We must do the same thing for our crops. I have a private letter from Prof. Shelton, of the Kansas Agricultural College, in which he says: 'Our crops of all kinds are wonderful—surpassing anything I have ever before seen. This afternoon I figured up the yield and cost of a small field of wheat. The yield was a fraction over 41 bushels per acre, and it cost, exclusive of taxes and interest on investment, 30 cents per bushel. Our corn promises equally well. I shall be disappointed if we do not get 1,800 bushels from 25 acres. But prices are very low: wheat 60 cents, corn 18 cents, and oats 15 cents per bushel, and hay only $2.50 to $3.00 per ton.'"

"That crop of wheat in Kansas," said the Dea-

con, "sold for $24.60 per acre. Here it would have brought $43, to say nothing of the straw. The difference is over $19 per acre."

"But you must recollect," remarked Charley, who is somewhat inclined to go West, "that to raise 41 bushels of wheat per acre here, we must underdrain and have our land very clean and rich, and then not get such a crop one year in ten."

"We will not," said I, "discuss this question of whether farming is more profitable at the West than at the East; it depends a good deal on circumstances. No matter where you go, there is little money to be made in poor, ordinary farming. Prof. Shelton figures out a profit of *one hundred per cent* on his wheat crop. But how is it with the farmer who raises only 20 bushels per acre? Prof. Shelton's crop cost $12.30 an acre, and the *profit* is $12.30 an acre. If the crop of twenty bushels cost $10 per acre, the *profits* would be $2 per acre."

"Yes," added the Doctor, "judging from past experience, in a year or two we should have an unfavorable season, and wheat, instead of selling for 60 cents a bushel in Kansas, will bring $1.20. In such a year, Prof. Shelton may get only 30 bushels per acre, instead of 41 bushels, and many others instead of getting 20 bushels will get only 10 bushels. In this case, the *profits* from the 10 bushel crop will be $2.00 per acre, and from the 30 bushel crop $24 per acre, or twelve times as much.

"And so," said the Doctor, "you are tired of talking about farm *crops*. You think farmers should bestow more thought on the preparation of the land. This may be true, but still it is well to think about particular crops and how to manage them, and what varieties to sow and plant. There are more good farmers in the world than many of us imagine; and let me tell you, that the next ten years will see a mighty advance all along the line. Think of the enormous exportation of farm produce, and above all, of the exportation of cattle, sheep, and hogs. Think of the great quantities of artificial manures that are being used; and the farmer who uses one ton this year, will be likely to use two tons next year, and five tons the year after. This will enable him to farm better and raise and fatten more stock. He will keep better bred animals and feed richer food, and this will give him more and richer manure, and that will make him a richer and happier man. So do not be discouraged. I agree with you fully that we *must* pay more attention to draining and cleaning and enriching the land; but when this is done, we must also give attention to improved herds of animals and improved varieties of plants. Without this, the good farmers who improve the land will not get full returns for their skill and enterprise and labor."

"That is the right doctrine," said the Deacon; "and I do not think the *American Agriculturist* receives sufficient credit for the care it exercises in testing and recommending new varieties of farm crops. I place great reliance on its judgment. Its advocacy of the 'Early Rose' potato, alone, has put millions of dollars in the pockets of farmers. It was the *American Agriculturist* that first induced me to try the 'Peerless,' and though many have condemned it, I feel sure that this variety has been a very profitable one in many sections. Until last year, it was the most productive and profitable kind I raised. The Late Rose that year was decidedly the most profitable. But this year the 'Peerless' again comes to the front."

"I am glad," said the Doctor, "to hear the Deacon say so much for the *American Agriculturist*. Much more—very much more—could be said in grateful acknowledgment of its discriminating judgment in regard to the relative merits of new varieties. It deserves the thanks of every farmer, fruit-grower, and florist in the United States, or for that matter, in every land where the English language is spoken. It is a grand and noble paper—fearless, outspoken, and eminently trustworthy. It condemns the bad and recommends the good."

"I find that this difference in different years, which the Deacon alludes to, is true of other varieties. Last year 'Compton's Surprise' did not do anything like as well as it has this year. The 'Snowflake' is also better this year than it was last year, and I do not think there was a rotten potato in the field of this variety, or the 'Early Vermont,' 'Jones' No. 4,' and 'Genesee Co. King.' 'Compton's Surprise' suffered somewhat, and 'Brownell's Beauty' still more. The latter, however, were very large, and yielded well, and after all there was probably not over five per cent of diseased potatoes. They have the advantage, too, when they rot, they rot right through and have done with it! 'Perfection' yielded wonderfully well. This is the first year we raised it, and have not yet tested its quality. 'Jones' No. 4' we have raised for three or four years. I have not yet made up my mind in regard to its value. This year it has done remarkably well for such a poor season. It produced more bushels per acre than any other variety. It is as handsome as the 'Snowflake,' and much more productive, but the tubers are small. One of my men says that years ago we had a variety called 'Thousand in a Hill,' and this reminds him of it. If planting it early on rich land would increase its size, it would be a very profitable variety."

"But of all the varieties we have raised," said Charley, "none are quite equal to 'Genesee Co. King.' There is not a man on the farm but thinks it decidedly the best in yield and quality. It was a pleasure to dig them. They resemble the 'White Peachblow,' but yield three times as much. They are a late variety, grow vigorously, and the bugs do not injure them half as much as they do the 'Snowflake' and other kinds that have smaller vines. We ought to plant all of them next year."

"You manured part of your land, and part not; did the potatoes rot more on the manured land?" asked the Doctor.

"No, not in the least; and I am perfectly satisfied that we must manure our land for potatoes—either with good, rich, well-rotted barn-yard manure, or with artificial fertilizers, *or both*. With both, would probably be the better plan. I would draw out the manure this winter, or very early in the spring, and spread it broadcast on the land, and plow it in. The longer it is exposed spread out on the surface of the land, the better I should like it. Then apply some good artificial manure in the ridge or hill. We must give up the notion that manure rots potatoes. Now that we have to fight the bugs, we must plant potatoes on our best and richest land; plant the best and most vigorous varieties, and take good care of them. There is much money in potatoes, if we can only raise good crops in unfavorable seasons; and this we can do if we select good land, manure it well, plant early, and take good care of the crop."

About Agricultural Fairs.

The writer of "Among the Farmers" apologizes for, and almost falls in with, those who think that fairs can not be conducted successfully without the usual horse trot. Yet he quotes the N. Y. State Agricultural Society as not recognizing their necessity, though it holds one of the most successful fairs—in all that constitutes success at an agricultural fair—held in the country. Another example is

The Orange County Fair.

Until this year the Orange County (N. Y.) Agricultural Society had thought trotting to be the thing to draw the crowd needed to pay their expenses. This year, however, it voted to hold the fair at a place where there was no track, and trotting had no place on the bills. The result was, *larger receipts* than in several previous years, and a more successful exhibition in every respect. This fair also illustrated some other facts in regard to fair-grounds in general. As no trotting was to be held, a long track was unnecessary. A field of 25 acres was rented, which was bounded only by a low stone wall. On one part, where the ground was smooth, a short track was staked out with no expense for grading, for showing carriage and draft horses, colts and stallions, and saddle and walking horses. On the other portion, tents and temporary board structures sufficed for the show of implements, poultry, fruits, and field products, flowers and domestic articles, and pens for the live-stock. A few special police around the borders of the field kept out intruders. This was all. The Society owns no expensive grounds or buildings, and so has no debt on its shoulders to encumber free action. The small field, which the no-trotting allowed, was convenient to the highway, and so compact that one could visit every part in a short time and not be weary and foot-sore from the long walks so often necessary on a fair-ground where the exhibit must cover much space, as a sexton scatters a small congregation in a large church, to give an appearance of fullness. The rent of the field, and the expense for tents, and police, etc., were less than the interest would be on the cost of large grounds with track, buildings, and high board fences. The grounds being open to the view of the public from the highway, wore a bright and inviting look that must have drawn many who would not otherwise have attended. The fair was such a success, that it was at once voted to follow the same course next year.

A New Departure in Premiums.

It is the usual custom to offer small premiums of $1 to $2 for "the best cow," "the best three sheep," etc., of each of several breeds, and natives or grades. So it was at the Orange County Fair, until this year a "Friend of Agriculture" offered several special premiums, among them the following: "For the best herd of 5 Ayrshire cows, $10.00," and the same for Dutch or Holsteins, and for natives or grades. "For the best flock of 10 or more ewe sheep, $10.00; particular attention to be paid to mutton qualities as well as to wool bearing." "For the best acre of wheat harvested the present year, $6.00; competitors to exhibit a bushel of the average product of the field, and to furnish a sworn statement as to cost, yield, and methods of cultivation." "For the best collection of implements exhibited and kept for sale by any dealer within the county, $15.00; second ditto, $10.00." The donor argued that any man might have one 1st prize cow in an otherwise poor herd, while it is for the interest of agriculture to encourage the keeping and exhibition of good *herds*. For sheep the same argument holds; and it was desired to create the impression that mutton production is as important as wool in sheep husbandry. The amount offered was concentrated in a few things which were of most importance to the agriculture of the county, instead of dividing the money among an endless number of comparative trifles. Milk records and pedigrees were asked for in connection with the cows exhibited, on the ground that the cow's history and performances were as important as her looks. The result of those special offers was the calling out of 156 cows—far exceeding the usual number—and about 60 sheep. The total amount of these premiums was only $90, but they were distributed in such a way as to be influential in *what* constituted a large portion of the exhibition.

Many believe it desirable to have a great variety of premiums, so as to enlist and interest the largest possible number of persons, and to encourage small farmers. Others aim for ample permanent grounds and buildings. We describe this particular fair, because it presents the other side of the subject, and may be worthy of the consideration of the hundreds of Societies that will soon be making plans for the next campaign. Of course modifications will be required to suit the needs of any particular locality.

What Underdraining Did.

One of my neighbors made an experiment in underdraining seven years ago, with very satisfactory results, which are worthy of record. The soil was originally good, but had been much neglected for many years, and yielded small profit under the old style of management. The lot selected for drainage comprised eleven acres, the lowest part of it a swale, sloping to the north, and the east and west sides heavy moist land that yielded weeds and coarse grasses. It was estimated to be worth *not over five dollars an acre* when taken in hand. A main drain of six-inch tile was put through this field, four feet deep, with lateral drains of two-inch tile, twenty-five feet apart and two and a half feet deep. The whole cost was about $50 an acre, or

$550 for the eleven acres. This included everything—opening ditches, cartage, tile, laying tile, and superintendence. As the fall was good, there was a complete drainage of the lot, the water passing off into the ditch in an adjoining field. These drains were put down seven years ago. The first year after the drainage, the land was plowed, manured with 350 loads of stable and yard-manure, and sowed with corn for fodder, and seeded with timothy in the fall. The crop of hay the first year was two tons to the acre. Allowing it to be worth $10 a ton standing, there is seven per cent interest on the $55 invested in land and drains, and some return of capital. There has been no manure applied to the land, except that on a few small patches, where the seed failed to catch, there was one application of liquid manure. There has been a steady increase of grass until this year, when 39 tons, or 3¼ tons to the acre, were taken from the field. The hay was well cured, and weighed on platform scales, so there is no guess-work about the yield. With the same estimate for the hay, this is a return of $35 upon the original cost of $55 for land and drainage. As there has been no outlay for manure in six years, with a steady increase of productiveness, it follows that the drainage has been gradually improving the land. A layer of soil and subsoil some two feet in thickness, formerly so saturated with water as to be useless, is now penetrated by the air, by the rains, and by the roots of grasses in search of their appropriate food. As the experiment shows, rich stores of plant-food became available every year, and with proper handling may prove inexhaustible. In such a heavy growth of grass, there must be a corresponding increase of roots, and the sod must be growing richer. The experiment is a strong argument for the draining of swales. CONNECTICUT.

Fig. 1.

[Our correspondent writes that the aftermath has not been cut from this field, or the meadow grazed, since the drainage, and infers that this has considerable to do with the large crops obtained. But he wisely adds that it is uncertain how much of the gain is due to the improved condition of the soil from drainage, and how much to the non-cutting of the aftermath. We have in mind a hill farm that cuts 250 tons of hay per year from only 80 acres in grass. Two crops are removed from nearly or quite all of this area, and three crops from a considerable portion. The owner asserts that he could not obtain so much from a single cutting, and he had to begin, of course, with one crop. In the experiment described above by "Connecticut," we declare in favor of the drainage as being the factor which gave the increase.—EDITORS.]

Fig. 2.—TROUGH FOR WEANING CALVES.

Hints and Helps for Farmers.

SHOE FOR INTERFERING HORSES.—"A Subscriber" sends a sketch (from which we have made the engraving, fig. 1) of a shoe which he has devised and tried successfully to prevent horses from interfering. It is made twice as wide and heavy on the outside as on the inside. To equalize the wear, the inner and lighter portion of the shoe is made of steel.

A CALF-FEEDING TROUGH.—"B. S.," Washington, Ind., sends a plan of an old device, but none the less valuable, for feeding milk to calves, and for teaching them to drink milk while they are being weaned. It consists of a wooden trough (fig. 2), at the bottom of which is fastened a loop of leather one inch wide and six inches long. The calf learns to suck at this piece of leather, and will soon leave it and drink the milk. Calves three days old will use this device. It is worth trying.

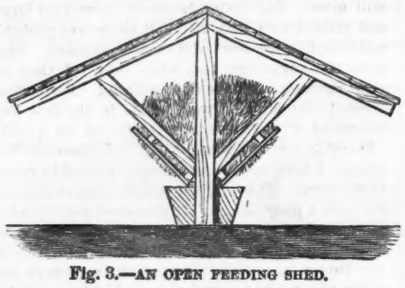


Fig. 3.—AN OPEN FEEDING SHED.

AN OPEN SHED FOR FEEDING.—A feeding trough in a yard, which can be covered to keep out snow or rain, is a desirable thing, and many devices have been contrived for the purpose, most of which are too costly. We give herewith a method of constructing a covered feeding trough, which may be made very cheaply of the rough materials to be had on every farm. A sufficient number of stout posts are set firmly in the ground, extending about 10 feet above the surface. They should be about 6 feet apart and in a straight line, and a plate fastened to their tops. A pair of rafters supported by braces, as shown in figure 3, is fitted to each post. A light roof of laths is laid, and covered with bark, straw, corn-stalks, or coarse hay. Strips are fastened from one brace to another, and laths or split poles nailed to them, about 6 inches apart, to make a feed-rack. A feed-trough for grain or roots is built upon each side. For sheep, the shed and rack may be made only 8 feet high at the peak, and the eaves 4 feet from the ground,—giving better shelter.

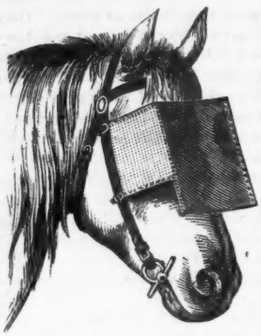


Fig. 4.—TO PROTECT THE EYES.

A SHADE FOR HORSES' EYES.—The most frequent cause of weak eyes in horses is a badly arranged stable. Foul gases irritate and inflame the tender membranes of the eye and head, and horses brought from dark stables into bright sun-light, or on to glittering snow, are dazzled and blinded. The existing weakness or irritation is intensified, and the poor animal suffers unsuspected torments. *The* remedy is to purify the stable and give it sufficient light, shaded by blinds, from before and behind the horse, or from both sides, avoiding a light from only the front, rear, or one side light. A shade for weak or inflamed eyes may be constructed by fastening wires to the bridle and covering it with oiled cloth in the manner represented at figure 4. Thus a soft, subdued light reaches the eyes, while the horse can still see the ground immediately before him. It will be a timely job to prepare such a shade now, for use when the snow comes.

Fig. 1.—CHARCOAL KILN.

Kilns for Burning Charcoal.

"Charcoal iron" is a valued product in the market, because the metal is free from sulphur and other impurities which are imparted by mineral coal and render the iron brittle and difficult to work; charcoal iron is tough, and furnishes the best material for fine manufactures. Car wheels and similar parts of heavy machinery, which are subjected to a like strain, are made from this iron.

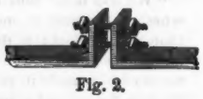


Fig. 2.

Thus it is that charcoal burning is usually connected with iron-working where there is abundance of wood. The "pit" manufacture of charcoal was described in the *American Agriculturist*, Feb., 1860, but it is more economical to make it in permanent kilns, even for sale in the market, the cost of the kiln coal being 50 per cent cheaper than the pit coal, and the waste much less. The kilns may be conical, or in the shape of an elongated parallelogram, and are built of common hard brick. A round kiln (fig. 1) 12 feet across, would be 16 feet to the top of the dome. The wall is built up perpendicularly for about half the hight, when it is drawn in gradually, requiring no supporting centers, until the opening is about 4 feet in diameter. This is closed by a cast-iron plate. The kiln is strengthened by broad iron half bands, or two tiers of them drawn up tightly by screws working in flanges, as shown at figure 2. Several bricks are left loose in the lower courses, and others near the top, to be removed to make openings to admit air for draft, and for ventilation. There is a cast-iron, double door on the ground level, and one at the upper part for putting in the wood. Figure 3 shows a long kiln of greater capacity, which has plain brick walls, covered with a light arch of brick, and supported by a frame of timber posts, which are set in the ground. The doors and ventilating holes are similar to those of the conical kiln.

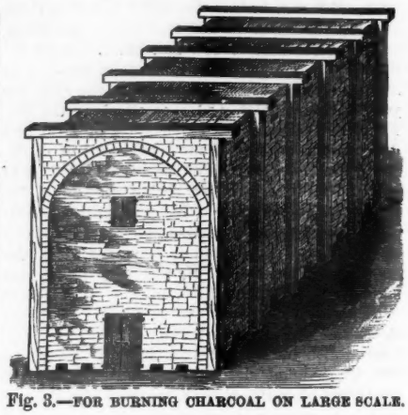


Fig. 3.—FOR BURNING CHARCOAL ON LARGE SCALE.

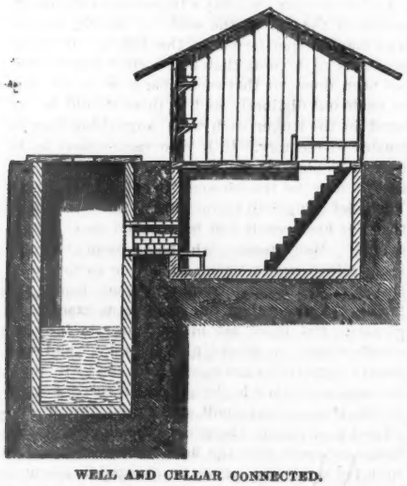
Boys on the Farm.

It is a proud day when the average boy gets on his first pair of boots and trudges to school by the side of his older sister. He does not care any longer to take her hand. The leading strings are cut. But this early ambition to be a man is entirely eclipsed, when he has taken charge of his first pair of steers, and started for the fair. Has he not raised them from their mother's milk up, broken them to the yoke and to the cart, taught them to pull and to back, to haw and to gee, and to obey his word of command? They are his workmanship, the evidence of his skill in subduing brute muscle, and making it do his bidding. He is going up to the exhibition to display the fruits of his triumph, and, as he hopes, to wear the laurels of victory. He is no longer merely a spectator upon the fair grounds, but an exhibitor of stock and an entertainer of spectators. There is unquestionably a difference of native tastes in boys. Some have a natural aptitude to one calling and some to another, but most men have their callings determined by

early circumstances; sometimes by incidents so trivial, that they have hardly a place in memory. It is not difficult generally for a father, who loves the farm, to determine the calling of his children. If he makes it a business of thrift, and provides comfortably for his family, they will respect the calling. If he is discouraged and continually shifting his work, or his home, they will not be likely to make tillers of the soil. But if he conducts the farm upon business principles—makes it a machine for coining money—and providing home comforts, they will be ready to invest in it. One can hardly begin too early with his boys to incline them to the calling that is to give them bread, and the means of their future usefulness. If the boy is to be a farmer, he must begin to have a personal interest and venture in farming while he is yet a boy. Filial affection, in a happy home, is a very strong motive to industry and fidelity, but it does not shape a boy's plans for life like an investment of his own brains and muscles in his daily work. He should have crops and animals, not only that he can "call" his own, but that *are* his own, to keep, to enjoy, and to sell for his own pleasure and profit. The trusts may be small at first, but they should be absolute, and let him have his own experience of success and failure in managing them. Let him manage poultry, a lamb, a calf, or a colt, and exhibit his own stock at the fairs. We notice with great satisfaction the increasing attention paid to the boys at the fall fairs. Boys did some of the best work at a recent plowing match at one of our fairs. One, a boy of fourteen, held the plow and drove his own team, and made as good a seed bed as his older competitors. These premiums for boy's work, are in the right direction, and should be carefully studied in making up the lists for next year. Make room for the boys.

A Well-Cellar.

In parts of Pennsylvania we have seen a cellar so connected with a well as to considerably lower its temperature. The arrangement might be used to advantage elsewhere. It is represented in the engraving. A cellar is dug about 3 feet from the

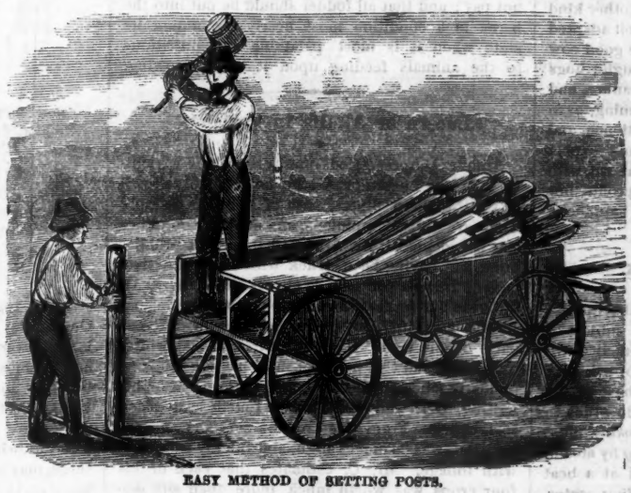


WELL AND CELLAR CONNECTED.

well, as deep as may be convenient, and an opening made between them through a brick arch, the mouth of which is covered with coarse wire netting. A slab of stone is placed near the opening, upon which butter is set to cool. A shelf, or shelves, may be put up around the cellar. It is separated from the room above by a tight floor, and connected with it by a trap-door and stairs. The cellar walls should be of stone or brick, whitewashed. The upper room serves as a store-room for clean articles.

A Method of Setting Fence Posts.

Where the soil is soft, loose and free from stone, fence posts may be set by driving, more easily and firmly than by digging holes for them. A method of driving is shown in the annexed engraving. A wagon is loaded with posts, and furnished with a movable stage, upon which the person who drives the posts may stand when first starting them. The engraving needs no verbal description except that the hook which holds the stage in place, is made of strap iron, and fastened to the floor of the stage. One man holds the posts upright, while the other

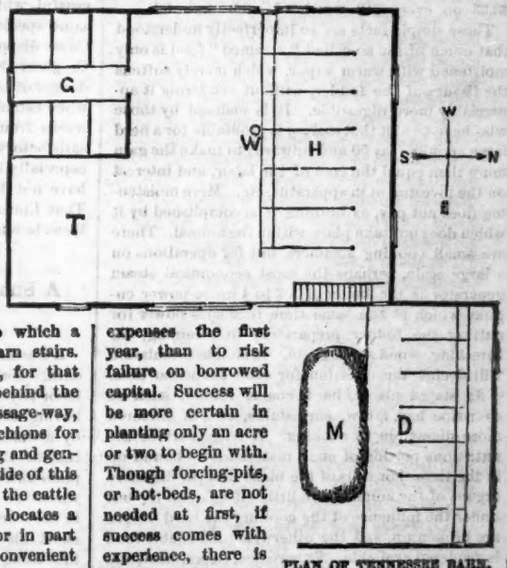


EASY METHOD OF SETTING POSTS.

drives them. When a post is driven home, the wagon is moved on to the next place, and the operation repeated. This is an easy, rapid and economical manner of setting posts for any kind of fence.

A Tennessee Barn.

A Tennessee subscriber sends the plan of a barn he is building, which we reproduce, with a few improvements, in the engraving. He writes: "I am not able to build an expensive barn, and have had to study how to obtain the most convenience for the least money. Just now labor and material are very cheap, and I think that the barn can be built for an outlay of $250, by furnishing some timber myself, of which I have plenty. I wish to thank you for your remarks on painting out-buildings, especially as to trimmings. They suit my case."—The main barn is 30 x 40 ft., posts 20 ft. A floor for a loft is put in, 8 ft. from the first floor, over the horse stalls, granary, and tool room, and 11 ft. over the drive-way to admit threshers, etc. Double doors open on opposite sides, a small door at foot of stairs, and windows as shown. At *T* is the tool-room; *G*, the granary; *H*, the horse stalls; and at *W*, a well. The cattle shed, *D*, is 20 x 25 ft., with 16 ft. posts, and a loft for hay, into which a door opens from the head of the barn stairs. This shed may be open in the rear, for that section, or a partition may be put up behind the cattle stanchions at a slight cost. A passage-way, 2½ feet wide, runs in front of the stanchions for convenience in feeding, and familiarizing and gentling the cattle. On the front and south side of this shed is the manure-yard, and a place for the cattle to run if desired. Our correspondent locates a compost heap at *M*, which is wholly or in part under cover. A door under the stairs is convenient for removing the droppings of the horses, and a trench behind their stalls leads the liquids to the manure-heap. It is thought best to have the horses face the barn floor, that they may be more familiar with the people, and for convenience in feeding. It is quite as important to have a well planned barn as a well planned house; in both cases proper forethought will save many steps in doing the daily work. Not only the number of animals to be provided for modify the plan of the barn, but the nature of the land must be considered in designing the building; hence a great variety of plans are desirable, that one intending to build may combine such features of each as suit his needs and surroundings.



PLAN OF TENNESSEE BARN.

A Mechanic Turning Farmer.

We are asked to lay out a plan for a farmer in the following circumstances: He owns and lives on a small hill farm of about 40 acres, located within 25 miles of a large Eastern city, and has two boys in his family, one of whom is interested in the farm, the other not. The land is somewhat rocky, and not over fertile, but the soil is light and warm, and will produce early crops. Aside from the city market, there are several large manufacturing villages within easy reach. The owner has but little money capital. He has lived on the farm for 20 years, but has always worked at his trade of box-maker. He is tired of the confinement, and now that his son is developing a taste for farm work, his own natural love for the soil is re-awakened, and he seeks advice.

The location and the soil are well fitted for growing vegetables and small fruits for the neighboring villages. Like many other country towns, these are largely supplied with vegetables, even late in the season, from the surplus stock of the city market, which is often several days old, partially wilted, and of quite inferior quality. Now if our correspondent has sufficient experience, energy, and determination to look after the cultivation and marketing of his crops, we know of nothing which he can undertake with a better hope of moderate success, than raising those vegetables, the value of which consists in their freshness, such as early peas, sweet corn, string beans, and others. A strawberry bed may be made the source of considerable income; and this, if successful, will naturally lead to the cultivation of various other small fruits.

A beginning can be made in this line on a small scale, without any necessity for much capital, aside from labor and careful attention. Avoid getting into debt. It is better to produce only enough to pay expenses the first year, than to risk failure on borrowed capital. Success will be more certain in planting only an acre or two to begin with. Though forcing-pits, or hot-beds, are not needed at first, if success comes with experience, there is time enough to enlarge by adding these and other facilities. A few simple rules only are necessary; but these are imperative: Select ground sloping toward the south or east, and more or less sheltered either by the slopes or by trees. Drain thoroughly if needed. Pulverize the soil by repeated plowing and harrowing. Enrich at the rate of six cords or more of

good, well decomposed stable-manure per acre; if this costs over $5 per cord, it will probably be cheaper to buy chemical fertilizers in part, unless the soil is pretty heavy and compact, in which case the stable manure will be best, to loosen its texture. Do not scatter the manure for one acre over two, as it will produce more profit on the smaller area. Cultivate thoroughly and often, and allow no weeds to grow. As soon as the vegetables are in proper condition for table use, market them; and make sure to offer for sale only the best; for these prices are easily obtained. Henderson's "Gardening for Profit" will afford much useful information.

The farm is too small for almost any other kind of farming, but is large enough and well adapted to vegetables in location and soil. One good cow to supply the family with milk, is enough; hogs may be kept at a profit for making manure, and utilizing the waste. To succeed in farming, *as in anything else*, one must have energy, patience, and perseverance; without these he need not expect success, and "success" in cases like the above, with limited facilities, does not mean large profits, but only a good living, independence, and happiness.

Cooking Food for Stock.

As regularly as the seasons, come the queries regarding the latest knowledge on the subject of cooking food for cattle; whether the practice will pay; why it is not more generally adopted, etc., etc. A few simple principles lie at the base of the practice, which should be understood in order to judge fairly in the matter. First—*Cooking* must not be confounded with mere *moistening* by steam. Cooking, proper, is only accomplished at a heat nearly or quite equal to that of boiling water, or of steam at that temperature. This degree of heat breaks up the food particles, especially the starchy portion, and renders a considerable amount digestible which otherwise might pass through the animal and be practically wasted. In order to secure the proper temperature in the cooking-box, there must be an engine-boiler, or steam generator of sufficient capacity to keep the box full of hot steam; and the box itself must be so constructed as to *hold* the steam when received. Cooking, under such circumstances, is said to render coarse food, such as ripe and badly cured hay, old corn-stalks, straw, etc., from one-fourth to one-third more digestible—*i. e.*, a saving of $2.50 to $3.33 on every $10 worth of such material.

These simple facts are so imperfectly understood that much of the so-called "steamed" food is only moistened with warm vapor, which merely softens the tissues of the fodder, without rendering it appreciably more digestible. It is claimed by those who have tried it that *cooking* is profitable for a herd large enough (say 50 and upward) to make the gain more than equal the cost of the labor, and interest on the investment in apparatus, etc. Mere moistening does not pay, as nothing is accomplished by it which does not take place within the animal. There are small cooking steamers, but for operations on a large scale, perhaps the most economical steam generator is the boiler of a 2 to 4 horse-power engine, which at the same time furnishes power for cutting the fodder preparatory to steaming, for threshing, wood sawing, etc. A simple calculation will decide the question for each particular case.

As stated above, hard, coarse fodder, such as over-ripe hay, straw, corn-stalks, etc., is rendered more digestible by cooking. A large part of the nutritious portion of such material is so bound up in the tissues or cells of the plant that the digestive organs of the animal have little effect upon it; but under the influence of the cooking the hard tissues are broken up, and the otherwise unavailable food is rendered available. Experience, experiment, and investigation show, however, that properly cured hay,—grass cut when green and succulent, and simply *cured*, not *dried*—fodder corn, Hungarian grass and similar fodder, roots and finely ground grain, are but little if any benefited by the process of cooking; for these are already very nearly or quite in the natural condition, and suited to the animal's capacity for digestion. A cow whose organization has become so artificial as to be unable to digest the food provided by nature, had best be sold to some man who keeps a large herd, and believes in and practices cooking; he will find that it pays in her case. No one would think of steaming grass or any green fodder, because his observation and experience tell him that nature has made the cow's stomach to digest such food; and experience tells the same story about properly cured fodder.

The obvious lesson from these facts, is, that cooking of coarse fodder pays, when there is enough of such material to be utilized, and the herd of cattle is a large one; that mere *moistening* such feed does not pay; and that all fodder should be put into the barns in a condition most nearly resembling its state when it is most palatable and nutritious to the animals feeding upon it while growing.

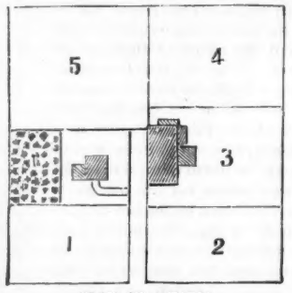
Lucern or Alfalfa in Vermont.

Among the unsettled questions in our agriculture is: can Lucern or Alfalfa be profitably grown in the Northern States, east of the Mississippi? There are differing opinions, and evidence on either side is welcome. Mr. Albert Chapman, of Middlebury, Vt., having been struck with the productiveness of Lucern (or as it is always called there, Alfalfa,) in California, procured seed from thence, and sowed it in 1877, in several patches on different parts of his land. It passed through last winter uninjured, and this past season he has cut from one of his patches three crops, and at the time of his writing, Oct. 28th, there was a fourth crop ready for cutting. From this crop he sent a specimen; the stalk was 23 inches high, and thickly furnished with foliage. Mr. C. estimates that each of his four crops was worth much more than any one crop of Red Clover produced from the same area of land in his county this year. Two of the other patches yielded three crops each, and on the other only one crop was cut, the succeeding growth being allowed to go to seed. Mr. C. attributes his success, in the first place, to the character of his land, which has a deep and porous subsoil, that allows the long roots of the plant to penetrate deeply. He thinks that where there is a hard, compact subsoil, the plant will not succeed. He regards as the second reason for his success, the sowing of California seed. If not all, the majority of the trials with Lucern have been with European seed. He learned in California that seed from Chili was always successful, while that from Europe, though from the same species, did not produce hardy plants. To those disposed to experiment with the plant, Mr. C. gives the caution to not sow the seed until all danger of late frosts is past, for though quite hardy when established, even a light frost in the first few weeks from the seed, is fatal to it. This is a very satisfactory account, as it points out conditions, especially that relating to the soil, which probably have not been observed in former experiments. That Lucern is a most valuable foliage plant where it can be successfully grown, seems well established.

A Simple System of Farm Accounts.

(FIRST PAPER.)

A Farmer who keeps no accounts, works in the dark. He knows not which part of his farm or labor pays, and which is a loss, and runs the risk of having the proceeds of his profitable labor offset by avoidable losses. He does not know whether this or that management is the better. With a plain and simply kept account book, he may know where he makes money and where he loses, and, in the words of a noted business man, he may "cut short his losses, and let his profits run on." The first thing in beginning to keep accounts is to make a rough map or plot of the farm, and to name or number each field, as indicated in the annexed plan, to be modified to suit any circumstances. The only necessary point is the recognition of each field, and the expenditures and receipts from it. Two books are required. The complicated systems of farm accounts in books prepared for the purpose, are bothersome, and in the end usually come to nothing, because they are not suited to the majority of cases, and are not used. The better plan is, for each one to make his own method, and use but two books—a daily record of events and transactions, and a ledger. The daily record is a most useful book, and if kept with regularity, in a few years becomes a history of the farm, if not of the family, and of the seasons and weather. A small book, 8 inches by 5, with 300 ruled pages, but without money columns, will serve for many years. These books are sold very cheaply now, but it will pay to have one of *good* paper. One can be made by



PLAN OF A FARM.

stitching together note paper or folded foolscap. One of the greatest benefits of keeping accounts is, that every thing becomes reduced to a system, and the most careless or inexperienced farmer soon becomes methodical and observant (if he persevere). In the record is noted the events of each day—more particularly the business transactions. The following lines will serve as a sample of how these may be entered. It will be better to state more particulars, to note the weather, etc., etc., but such simple records are always of very great value:

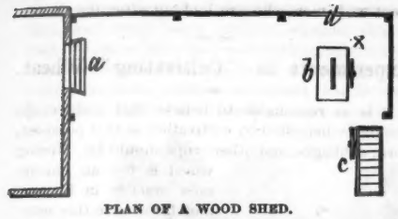
1878.
Oct. 1. Finished building spring house; cost $28.84.
" 2. Hired P. G., at $22.00 per month, to clear swamps.
" 4. Finished sowing rye in No. 5. *32 bush. seed, $19.20.
" 5. Paid D. P. $4.50, one week's wages. 7 doz. eggs, sold to B. Bros., at 13c.,.....91c.
" 7. Received from W. A. C., proceeds of sweet corn, from No. 5.....$181.16
" 9. Paid D. D. $600 for 12 cows. Finished cutting corn in No. 5, 8 days' labor. Began plowing No. 3.
" 10. Plowing No. 3. Paid for 2 tons of bran.....$32
" 11. Shipped 60 bushels potatoes to W. A. C.
" 12. Cash for milk sold this week, $32.50.—Began pulling mangels for cows. 10 bushels used.
" 14. Finished cistern; cost $30.25. 20 bushels mangels.
" 15. Finished plowing No. 3. Sowed 16 bushels seed.*
" 16. Finished harrowing No. 3. Husking corn, ½ day.
" 17. 9 bushels wheat to mill. 5 doz. eggs to B. Bros.

In this manner each day's transactions are noted, so that at the end of the week or month, the entries may be transferred to the ledger. It is unnecessary to do more than give a clear clue to what has been done, so that each charge or credit may be made out distinctly, and as these should be entered in the ledger each week, something may be trusted to memory. It is also unnecessary to be over particular in small matters, or to be so precise that it may be troublesome to enter some items. The chief thing is to know what is done so nearly that the final result can be reached as closely as may be. Many persons who begin, soon get hopelessly mixed up by trying to be too particular at the start. After a beginning is once made, and facility acquired, then one may be as exact as he pleases. But there are many things in farm accounts where one must "give and take," and such small irregularities are unavoidable and will about balance each other in the general result. For example, if one goes to mill with a grist, the time occupied need not be charged to the flour or to the house expenses with the flour; nor need the skim milk fed to pigs or calves be charged in accounts unless it is desired to know the exact cost of each item of work or production. But the grain used for feeding cows, fattening cattle, sheep, pigs, and poultry, should be measured out and charged to each, as it is very important to know what profit or loss is made from each kind of stock; and for each crop raised, the cost of labor expended upon it, and the value of the seed, and manures, should be noted, and the crop measured and its value calculated.

* The quantity of seed is large, being 4 bushels per acre, as it was sown thickly for cutting for cows in the spring.

Plan of a Wood Shed.

Where fire wood is used, a shed for its storage and preparation is a necessary addition to the homestead. It may be of any desired size, but 24 feet long and 12 to 16 feet wide, are good average dimensions.

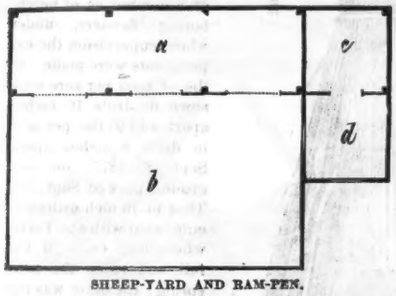


PLAN OF A WOOD SHED.

A convenient arrangement is shown in the engraving: at *a*, are the kitchen steps, at *b*, is a saw table, with a circular saw driven by the horse power *c*. Outside of the door, *d*, is the wood pile from which the sticks are brought through the doorway to the person sawing, who stands at *x*. As the wood is sawn, it is thrown to a heap close by, to be afterwards split and stored away in compact tiers for use.

Sheep-Yard and Ram-Pen.

Where a valuable ram, or a large flock of ewes is kept, it is advisable to have the ram confined during



SHEEP-YARD AND RAM-PEN.

the day-time, and admit him to the ewes only at night; or to turn into his yard, those ewes that are ready. A wether kept with the ewes will soon single out those which are in season, and direct the shepherd's attention to them. Under this method a full grown ram will be sufficient for 50 to 70 ewes, if he is kept in a vigorous condition by good feeding; the lambing season may be spread over one or two months, and the time of each ewe be accurately known. A plan of a yard and pens for this system is illustrated herewith. The ewe shed is at *a*, their yard at *b*; the ram's pen at *c*, and his yard at *d*. Dotted lines indicate gates.

Stock-Feeding for Profit.

"What Shall Eastern Farmers Do to Compete with the West?"

A considerable portion of the beef sold in the great markets of England is produced from animals brought from Scotland, and fattened in English pastures and feeding stalls. Scotch farmers breed animals well adapted for fattening, and at two to three years of age drive them southward and sell them to English farmers who "finish" them for market. Many of these are spayed heifers which make as good beef as steers—by some considered better. These animals are fattened on pasture feed, straw, turnips, and oil-cake, which makes a complete and profitable beef-producing food. The only thing purchased is the oil-cake (or Indian corn) which, as shown last month, leaves much of its value in the manure-heap. The result is two valuable money products: grain and beef, and a constantly increasing fertility of the soil, which is augmented by using purchased superphophates on the turnips. A similar practice has prevailed more or less in our Eastern States. Young cattle, produced at a low price further West, are purchased and fed a few months, to finish them off for market, and with very satisfactory results. A few cases are reported of parties fattening a large number in this way for the European dead meat trade. There is good reason to suppose that this practice may be profitably extended, and perhaps be a partial solution of the problem: "What can Eastern farmers do in competition with the West?" as it really makes each section help the other. At present, the animals which are fitted for beef on the Western ranches and shipped East, to be slaughtered on arrival, would make far better beef if fed for a month or two within 100 miles of the Eastern markets. The Eastern farmer has better facilities for this part of the work than his Western co-worker, and, being nearer, can get the product into market in better condition. No animal is really fit for beef for some weeks after a long railroad journey. Under this mutual arrangement, the Western farmer should (to develop the business) breed *beef* animals by the use of Shorthorn or Hereford bulls, and perhaps will in time introduce the Aberdeen or other Scotch polled cattle; but he is relieved of the work of the expensive feeding for which the ranch has but poor facilities. The Eastern farmer will produce a large amount of the best manure for the enrichment of grain and turnip land; he can purchase Indian corn and oil-cake at a low price, and will have wheat, barley, and beef to sell.

The most important point to be considered in this business is to attempt to fatten only that class of animals whose breeding and form are adapted to rapid laying on of flesh. We know of a farmer who believed in this idea, but he purchased a lot of "scalawag" cows and scrawny "stags." They were well fed and gained somewhat during the winter, but so little, that when sold they brought no more than their first cost; and though the food was not wasted, its valuable parts being mostly in the manure heap, yet the time and labor expended were all thrown away. Another acquaintance, within 100 miles of the above, purchased 60 grade Shorthorns at a fair price, and made a good profit from the investment. Fattening beef animals pays; but trying to fatten inferior animals is a waste of energy, time, and labor. The animals should be selected with special reference to the rapidity with which they will fatten; to the quality of the beef, fineness of bone, compactness of body, and small amount of offal which the carcass will yield.

Burning Green Wood greatly Wasteful.

Water in passing into vapor absorbs and hides nearly 1,000 degrees of heat. A cord of green wood produces just as much heat as a cord of the same wood dry. In burning the dry wood we get nearly all the heat, but in burning the same wood green, from one-half to three-fourths of the heat produced goes off latent and useless in the evaporating sap or water. Chemistry shows this, and why, very plainly. Therefore get the winter's wood for fuel or kindlings, and let it be seasoning, as soon as possible, and put it under cover in time to be dry when used. It will of course season or dry much faster when split fine....A solid foot of *green* elm wood weighs 60 to 65 lbs., of which 30 to 35 lbs. is sap or water. As ordinarily piled up, if we allow half of a cord to be lost in the spaces between the sticks, we still have a weight of about two tons to the cord, of which fully one ton is water or sap. Such wood affords very little useful heat; it goes off in the ton of sap. The great saving of hauling it home dry is evident—as we get the same amount of real fuel for half the team work. Beech wood loses one-eighth to one-fifth its weight in drying; oak, one-quarter to two-fifths.

Excellent Protection against Rusting.

For farm implements of all kinds, having metal surfaces exposed, for knives and forks, and other household apparatus, indeed for all metals likely to be injured by oxidation or "rusting," we know of no simpler, more effective application than that furnished to the *American Agriculturist* by the late Prof. Olmsted, author of Olmsted's Natural Philosophy, etc. He used it on air-pumps, telescopes, and various other apparatus.—Take any quantity of good lard, and to every half pound or so, add of common resin ("rosin") an amount about equal to half the size of an egg or less—a little more or less is of no consequence. Melt them slowly together, stirring as they cool. Apply this with a cloth or otherwise, just enough to give a thin coating to the metal surface to be protected. It can be wiped off nearly clean from surfaces where it will be undesirable, as in the case of knives and forks, etc. The resin prevents rancidity, and the mixture excludes the ready access of air and moisture. A fresh application may be needed when the coating is washed off by the friction of beating storms or otherwise. This single recipe will be worth many dollars to any one in the long run. There was talk of patenting it, at one time, but Prof. Olmsted gave it to us to be published for the general public good.

Some Facts About Lime.

Several correspondents ask for information concerning the use of lime on land, and all of them contain evidence of several commonly accepted but false theories. First, lime is not plant-food; or rather it is so common in most soils, and incidentally comprises so large a portion of many fertilizers, that its application as plant-food is unnecessary. We have not seen a soil analysis from which this constituent was missing, and there is nearly always considerable of it present in available form; all true superphosphates are composed of one-fourth part or more of lime, and it is prominent in Peruvian and fish guano, in nearly or quite all manufactured fertilizers, as well as in barn-yard manure.

Lime, however, has an important effect aside from its action as plant-food. Freshly burned lime (known as "caustic lime" and "quicklime") has a strong affinity for carbonic acid, so that when it and organic matter (which always contains a large proportion of carbonic acid) are mixed together, the lime and carbonic acid unite, promoting the decomposition of the organic matter. Newly "slaked lime"—which is lime united with water—has an effect similar to quicklime, though slower, and hence is better for farm use. Fresh, undecomposed organic substances, especially dung, contain the most valuable ingredient of plant-food, nitrogen, in its simple form; but it is very soon changed into ammonia, which in turn unites at once with carbonic acid. Then when lime is brought in contact with the mass, it at once combines with the carbonic acid, and the valuable ammonia escapes and is lost. When, however, the lime is applied before the ammonia is formed, the nitrogen is oxydized to nitric acid, which unites with the lime to produce nitrate of lime, and the nitrogen is saved. Therefore, lime may be used in stables and house privies, or in composting carcasses of dead animals, to advantage; but if mixed with manure a day or two old, the result is a loss of valuable material. The above also shows why, when lime is put into a compost, it has such beneficial action in hastening decomposition, and why it is necessary to use plenty of fresh earth to absorb the escaping ammonia.

Free acids, and those in easily decomposible substances, are also readily taken up by lime, and many injurious compounds, as of iron in wet lands, are rendered harmless. In some soils insoluble silicates, of potash, etc., accumulate; but the action of lime will break up these combinations and set the potash free for use as plant-food.

The above statements show that the main action of lime in the soil is in making available plant-food what was before unavailable. Therefore, while it may increase the crop-yield of poor land, it will tend to bring about its early exhaustion, unless plant-food is added. In heavy clay soils, the above mentioned chemical reactions of lime, destroys their tenacity and makes them friable and porous. Soils containing a large proportion of organic matter are benefited by its application. Wet lands are less benefited by lime than the same when drained, on account of the water. Light soils are improved by it when accompanied by a liberal application of muck or other organic matter; clays should also have the same treatment. As the best effects of

lime are not apparent until the second year, it is best to apply it early in the fall; then, if the land is not rich enough, manure or other fertilizer put on the following spring will help produce a good crop, other conditions being equal. The amount used is from 10 to 50 bushels per acre, according to circumstances, the condition of the soil, etc.

Chicken Pox.

Many of the descriptions of diseases of poultry, so nearly correspond with the symptoms of what is given as "Chicken Pox" in Felch's book on "Breeding and Management of Poultry," that we make an abstract of the chapter:

Symptoms.—A raised and warty eruption of the comb, face, and wattles, yellowish white in color. When the scabs are removed, these warty substances resemble a bunch of tiny spiles set into the flesh, and the wounds produced bleed profusely.

Treatment.—Remove the scabs and bathe in hot water and Carbolic Acid. When the bleeding ceases apply Citrine Ointment, which will dry the warts to hard black scabs; let these remain for 60 to 70 hours, when by removing them, they will take away the little white "roots" which are from one-sixteenth to one-fourth of an inch in length.

Each morning for four days, give a pill made as follows: Table-spoonful common Flour; one of Flowers of Sulphur; teaspoonful of Cayenne Pepper; 25 to 28 drops "Fowler's Solution," (Arsenite of Potash,) and milk enough to mould the compound into 20 pills. Dissolve four grains of Quinine in two-thirds of a pint of milk, giving one-half in the morning, and the balance at evening. Feed, while treating, on boiled onions and rice mixed with oatmeal. If the disease attacks the eye and so prevents feeding, make the food into pellets, which, if dipped in milk, and the bird held, will slip down the throat readily. If the sulphur acts too powerfully upon the bowels, scald the milk given, which will cause it to act in the proper direction. Feed vegetables, sulphur, and iron, to the flock to check the spread of the disease, and cleanse the house in which it appears, as thoroughly as the "Board of Health" would a house that had been visited by small pox.

Hornless Cattle for American Breeding and Foreign Markets.

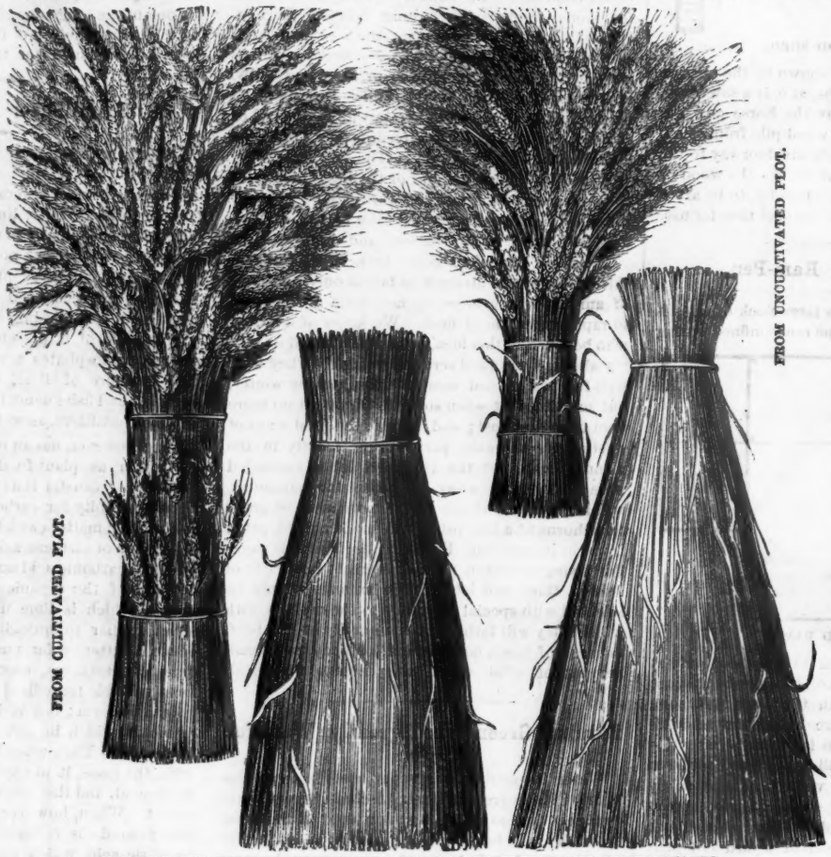
In several former numbers we have written of the Polled Cattle, which are now attracting considerable attention abroad. Mr. J. H. Wallace has been among them of late, and his investigations lead him to the belief that their general introduction among beef producers in this country, would be a desirable improvement. Horns were put upon cattle for self-defence, but in their domesticated state there is no good use for such weapons—indeed they are a positive detriment. In the freedom of prairie and farm life, horns occupy a neutral position, and are of small account, except as ornaments and handles to lead gentle cows by, on the one hand; and as boy and dog tossers, women frighteners, bar and gate openers, skin tearers and horse embowellers, on the other. As soon as these horns, however, attached to half as many valuable beef animals, are collected in a crowded cattle car, they at once become property destroyers, and fit subjects for the action of the Prevention of Cruelty to Animals Society. In the long journey from their Western pastures to Eastern markets, the cattle are sorely worried and often purposely, or unintentionally, badly gored by their neighbor's horns. Doubtless some of the falling off in condition during their travels is due to the rough handling of the numerous sharp and powerful weapons by ignorant heads; especially must this be the case with the half-tamed Texan cattle, whose wildness renders their long horns unusually troublesome when crowded into rail-cars.

On shipboard, the horns are a source of trouble, even more apparent than it is in railroad travel. Here the cattle are tied up in twos, in boxes just large enough for them to stand, but without room to lie down. In the animal's efforts to rest, the horns and halters frequently become entangled, resulting in injury and worriment to each of the box-fellows; and when one does lie down his frantic struggles to rise are sure to cause hooking and ripping, as his neighbor has no place to stand except partially over him. Every one knows that fretting and discomfort, and slight injuries even, invariably result in a falling off in flesh, and an unhealthy state of the body, and the horns of the cattle are very frequently an inciting cause of this condition.

To remedy this defect we would not do as the Irish farmers did when it was first found that hornless cattle brought a higher price in the English markets: they stripped back the skin over the heads of the young calves, and removed the just starting horns. Perhaps the remark of a farmer, that "a horn was a mighty convenient handle to lead a cow by," and that "a mooley cow would slip through a halter mighty slick," are serious objections to some, but why any more so than as applied to a horse? When to the quality of having no horns, is added that of being excellent beef animals, as the Angus or Aberdeen Polled Cattle are, even excelling the Shorthorns at many shows and in market, it must be admitted that these cattle deserve the attention of our breeders and beef producers. The result of the animals getting to market in a better condition after a long railroad or ocean journey, would be larger prices for the better beef, and more of it to sell—usually a cogent argument with men who are looking after the profits.

Experiments in "Cultivating" Wheat.

It is as reasonable to believe that grain crops should be benefited by cultivation as that potatoes, corn, cabbages, and other crops should be. Hoeing wheat is not an uncommon practice in Europe, and farmers in this country have begun it with marked success. We are favored by Mr. Travis, of Michigan, with samples of wheat grown with and without cultivation, on adjoining plots, and cut from equal spaces of ground. We give an accurate engraving from drawings of the bunches themselves, which are cut in two to save space. Reports are also at hand of a committee of neighboring farmers, under whose supervision the experiments were made. 68 lbs. of seed per acre were sown in drills 16 inches apart, and 90 lbs. per acre in drills 8 inches apart, Sept. 8, 1877, on sod ground plowed Sept. 1st. That in 16-inch drills was cultivated with the Travis wheat-hoe, once in the fall, and twice the next spring; the other was not cultivated. The wheat was examined during growth, by the committee, and harvested in their presence. According to their report, the wheat in the 16-inch drills did not lodge or crinkle down, while that in the 8-in. drills did so badly, (probably to some extent the effect of the Hessian fly). *The average yield was 60½ per cent greater in the 16-inch drills than in the 8-inch.* Where in some of the 16-inch drills the quantity of seed was only 3 pecks per acre, the stand was as thick as where 64 lbs. per acre were sown. The weights of 3 samples of each sowing, cut from equal spaces of ground, and with equal conditions in every respect except cultivation, quantity of seed and width of drill, are given as follows:



SHOWING THE DIFFERENCE BETWEEN CULTIVATED WHEAT AND UNCULTIVATED.

Cut from equal spaces.	*16 inch drills, cultivated.*	*8 inch drills, not cultivated.*
No. 1 sample weighed.....	3 lb. 4 oz.	2 lb. 0 oz.
No. 2 " "	3 lb. 2 oz.	1 lb. 9 oz.
No. 3 " "	2 lb. 10 oz.	1 lb. 12 oz.
Total weight.....	9 lb. 0 oz.	5 lb. 5 oz.

The number of heads in the samples were:

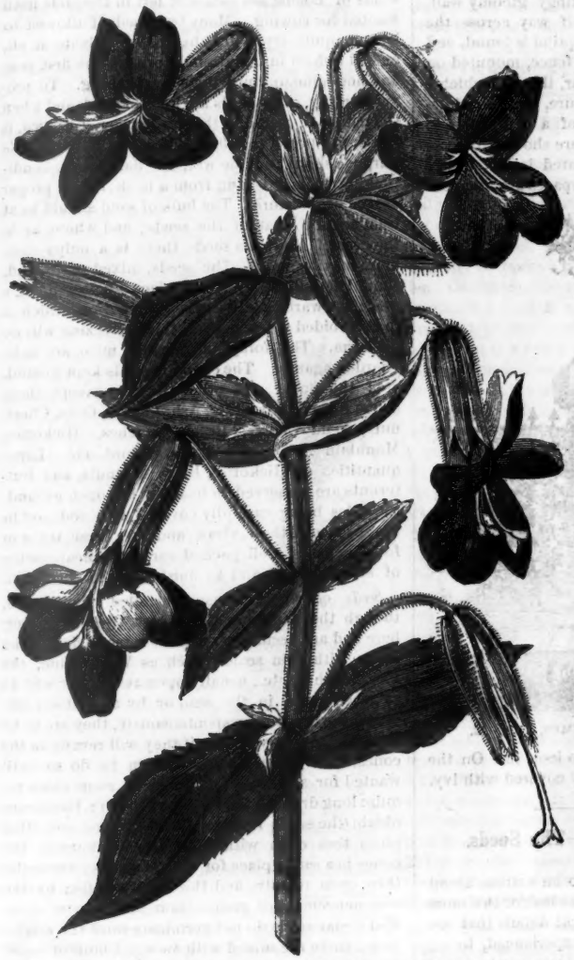
Cut from equal spaces.	*16 inch drills, cultivated.*	*8 inch drills, not cultivated.*
No. 1 sample had.....	564 heads.	320 heads.
No. 2 " "	526 heads.	361 heads.
No. 3 " "	453 heads.	338 heads.
Total.....	1,541 heads.	1,039 heads.

The larger growth of straw in the samples from the 16-inch drills was also conspicuous. These results are not especially wonderful when we consider the already well known beneficial influence of cultivation upon grain crops. This long-needed improvement in our agriculture has already made an impression upon farmers in widely separated parts of the country, and has resulted so favorably as to indicate that the cultivation of wheat will ere long become a very general and profitable practice.

The Scarlet Monkey-Flower.

(*Mimulus cardinalis.*)

"Monkey-flower" is neither an elegant name, nor is it descriptive for our plant. The genus was named *Mimulus* by Linnæus, because the corolla in some species has a remote resemblance to a grinning face, and while some authors suppose that he took the name from the Greek for ape, others think it was from the Latin for mime, or mimic; at all events the name has been translated into Monkey-flower too long for us to try to alter it. In the Atlantic States we have two native species of *Mimulus*, but their pale-purplish flowers are not showy; in Michigan and westward there is a yellow-flowered one; and still further west, the number of species increases, until on the Pacific coast they become so numerous as to number about 25. Probably the best known *Mimulus* is *M. moschatus*, the "Musk-plant," so often abbreviated to "Musk," that many suppose the drug with all-powerful odor, some call it perfume, to be from this vegetable, instead of being unpleasantly animal. The Scarlet Monkey-flower, a native of Oregon and California, has been in cultivation for nearly half a century, but, like many other good things, has been pushed aside by newer comers. We saw it in its wild state many years ago, but never happened to cultivate it until last year. The plant was unintentionally left out last fall, and, as the succeeding winter was unusually mild, it came up last spring with great vigor, and has all summer given a continuous bloom, which has not ceased up to the time we write—Oct. 25th. It can not be relied upon as quite hardy, and it is safer to make new plants from cuttings to keep over the winter in the greenhouse. In its native localities the plant is two to four feet high, but in cultivation is rarely over a foot, and, as it branches freely, is about as broad as tall. The engraving of the upper end of a branch of the natural size, shows its general appearance. There is, to us, something very pleasing in the aspect of this plant; the leaves, being clothed with somewhat sticky, minute hairs, have a pale and tender green, against which the flowers show in striking contrast; the color of the flowers is a most peculiar scarlet; it is bright and lively, without being intense. In Europe, where it is more cultivated than with us, several varieties have been obtained with flowers ranging from orange to dark-reddish purple. The stigma of this flower (the terminal portion of the pistil, which receives the pollen) is very sensitive. Instead of a blunt end or knob, as in most flowers, the stigma consists of two egg-shaped plates, as seen in the engraving; these spread apart when the flower is in "full blow," but whenever pollen falls upon the inner surface of these plates, they suddenly close; they are so irritable that the same movement takes place when they are touched by a small splinter, or any other hard substance.



SCARLET MONKEY-FLOWER.—(*Mimulus cardinalis.*)

The Graceful Sunflower.

(*Helianthus orgyalis*).

Those whose knowledge of Sunflowers is confined to the common annual species—*the* Sunflower—can hardly conceive of a graceful one. Some plants appear to be associated with certain surroundings and to belong to shiftless, "ne'er do weel" people. The dwelling of such is often surrounded by a dilapidated fence, within which Sunflowers and "Love-lies-bleeding" suggest that even in a house where old hats and rags supply the place of window-panes, there is some one who has a love for flowers, however coarse they may be. But all Sunflowers are not coarse, and while we admit that there are many unattractive ones, we claim that there are a few really desirable species. Among the most interesting and showy of the many Sunflowers is *Helianthus orgyalis*. *Helianthus* is easily translated into Sunflower, but when we came to find an appropriate equivalent for *orgyalis*, we were puzzled; the word means "the hight of a man," but "Man-high Sunflower," or even "Six-foot Sunflower," would hardly do. In considering what name would be best for a plant likely to become more or less popular, we were glad to find the difficulty removed. Mr. Robinson, in his work on "Hardy Flowers," had already given it a name—"The Graceful Sunflower"—which is not at all inappropriate. We had known this species for several years, but had not especially noticed its beauty until we saw the past autumn, at the Cambridge Botanic Garden, a fine clump of it, 10 or 12 feet high, where it was contrasted with a large number of other species of Sunflower, and easily outshone them all. Later we saw it in the herbaceous perennial grounds of Woolson & Co., Passaic, N. J., where, with the coarser, but even more abundant flowering *Helianthus Maximilliani*, it made a fine show. The plant is perennial; a well established root will throw up a cluster of a dozen or more stems which reach far above a "man's hight," being from 8 to 12 feet in good soil; they bear an abundance of leaves quite unlike those of the ordinary Sunflower, being sessile (without a leaf-stalk), about 6 inches long, and not over an inch wide. The flowers (properly heads of flowers) are about 3 inches across, and upon long stalks; the showy portion, or rays, being of a lively, cheerful yellow. For clumps upon a large lawn this is a most effective plant, and from its great hight it may be used for the center of ornamental groups of bold plants, as it is without the coarseness that herbaceous plants usually accompanies size, and it

GRACEFUL SUNFLOWER.—(*Helianthus orgyalis.*)

only needs to be known to be valued in proper situations. That we may not be alone in our commendation of this Sunflower, we add that Vilmorin (*Fleurs de Pliene Terre*) says: "This plant, from its majestic and picturesque habit, is particularly suited to ornamentation in landscape gardening; employed with discretion, it will produce excellent effects, especially when used in masses on lawns, or planted near bodies of water." Mr. Robinson says "a tall, graceful, willow-like herb. * * * The tips of the shoots for a length of 15 inches or so, cut off and placed in water in-doors, are as ornamental as the most graceful or delicate young Palm or Dracæna." We infer that this applies to the use of the graceful foliage before the flowers open. The plant is a native of Kansas and Arkansas, and blooms in August and later, and is quite hardy.

Fixtures for Window Plants.

Window boxes, those intended to hold the soil in which the plants are to grow, have been described in earlier numbers, but those who keep their plants in pots, will find a box exceedingly useful. The pots being placed in this and surrounded by sand, or what we think preferable, sphagnum or peat moss. The use of a box will prevent much litter, which is to some very neat housekeepers a sufficient objection to keeping any house plants. If the plants must be moved away from the window for safety in an unusually cold night, or for other reason, the box allows this to be done with very little trouble. A still greater advantage is, that it checks undue evaporation from the surface of the pots, and makes watering less frequently necessary. If the window has a deep sill, the box may sit upon that; otherwise it should be on legs with casters. The box may be of pine, securely put together, or of any ornamental wood.

Fig. 1.

In describing, some time ago, a window box for holding the soil, we suggested that oil-cloth carpeting of some neat pattern, made a covering that at a little distance could not be told from expensive tiles. Whatever the box may be, it should be lined with zinc. The pots will be of various hights, and in arranging them in the box, the tops should all be brought up to the same level, by standing them on blocks or small inverted empty pots, or whatever will serve the purpose. The moss is to be first thoroughly dampened and then squeezed in the hands; it is then to be packed in by degrees around the pots, using a stick to press it down where the spaces are too narrow for the hands. The pots should be far enough below the edge of the box, to allow of a thin layer over them and the earth they contain. Sand may be used in a similar manner, but it has no advantages over moss, while it is much heavier. In that most excellent work on window gardening, "Winter Greeneries at Home," the author, the Rev. Doct. E. A. Johnson, shows how he produced his fine effects with the most simple materials, and among other contrivances, are home-made brackets for supporting pots. Where the window has deep jambs the space may be utilized by suspending pots at the sides, and if these contain drooping or trailing plants, the effect is very pleasing. Figure 1 shows how a bracket is made from stout wire, brass in this case being the best. It will be seen that it is of one piece; the horizontal arm that holds the ring is double, and this portion should be neatly and closely wound with fine copper wire. The triangular portion at the bottom is to keep the whole steady by resting against the wall; this part may be circular or any other form that may be desired. Figure 2 shows the bracket suspended and in use.

Fig. 1.

A French Garden Fence.

Our correspondent "H.," writes from Paris: It is the custom in France, in both city and country, either to build grand houses in the form of a hollow square, with a court in the center, or to surround them with high walls like a fort. Every Frenchman's house is in fact his "castle." Visitors thus miss seeing the prettiest parts of Paris. Once in a while a gate is opened, and one takes in a passing glance of a small earthly paradise,—flowers and fountains, shady walks, and white statues, a palace of wrought stone; the heavy gates swing together once more, and leave only a dingy gloomy wall, the shadow of which falls half way across the street. Once in a while an exception is found, and I inclose sketch of an open iron fence, mounted on a foundation of stone and mortar, through which I recently looked with great pleasure, upon the flower garden and country home of a gentleman in Chaumes. The wall and fence are shown from the street side. The foliage indicated is ivy, neatly trained and trimmed; the open spaces are at a convenient height for passers-by to look in. On the inside, the stone work is entirely covered with ivy.

A GARDEN FENCE IN CHAUMES, FRANCE.

Forest Tree Planting—The Seeds.

Much that is very useful has been written about Forest Tree Planting, but the articles for the most part do not go into those practical details that are necessary, especially for the inexperienced, to secure success. While some forest trees may be raised as readily as a hill of corn, this is by no means the case with all. Certain trees that when three or five years old are among the hardiest, are, during their first year, quite as "miffy" as some greenhouse plants, and their culture in this early state actually requires more care than that of a Rose or Geranium. The care required is not of a kind that any intelligent person can not give, but whoever would raise trees from seed, must know that it is required, and how to supply it. Leaving the treatment of young plants until later, when we come to seed sowing, we at the present consider an earlier step, and one upon which success depends as much as on any subsequent one—the proper preservation of the seeds during winter, or from the time of gathering to that of sowing. Tree seeds present a great variety in size and other characteristics; between the soft, flattened scale of the Catalpa seed, up to the large, hard-shelled Black Walnut, there is a wide difference, and while both are seeds, the treatment proper for one would result in the loss of the other. While a few forest-tree seeds may be kept without any more care than that given to ordinary garden seeds, the majority require special treatment to preserve their vitality. It does not seem to be generally known that some seeds ripen in early summer and must be sown at once; these come up in a few days, the young trees grow rapidly and ripen their wood in preparation for winter all in a few months. The principal trees, the seeds of which behave in this manner, are: the Elms, and the Silver or White, and the Red Maples—other Maples ripening seeds in October. Of course, seeds of these trees are not usually kept by seedsmen, though some of them contract to deliver them as soon as ready. They should be sown as soon after they fall as possible. The principal seeds kept without any special care, beyond storing them in a cool, dry place, are: Ailanthus, Catalpa, Honey Locust, Locust, and Osage Orange; when not for sale, both kinds of Locust are better if left in the pods until wanted for sowing. Many tree seeds if allowed to become quite dry, will either not germinate at all, or will remain in the ground dormant the first year and not come up until the second spring. To prevent drying, many seeds are kept in sand, and when the nature of a seed in this respect is not known, it is safer to preserve it in this manner. Sand for this purpose should not be wet, but damp; the condition in which it is dug from a bank is the proper degree of moisture. The bulk of sand should be at least equal to that of the seeds; and where, as in the case of Magnolia seeds, there is a pulpy coat, more may be used. The seeds, mixed with sand, should be stored in a cool place; being moist, a moderate warmth will cause germination, which is to be avoided; as a general thing, freezing will do no harm. The forays of rats and mice are to be guarded against. The common seeds kept in sand, are: the Sugar and other Maples, except those above named, Box Elder, Ash, Linden, Oaks, Chestnuts, Wild Cherry, Beech, Birches, Hickories, Mountain Ash, Tulip Tree, Walnut, etc. Large quantities of Hickories, Black Walnuts, and Butternuts are preserved in heaps in the open ground, the piles being carefully covered with sods, or in the absence of these, straw, and over these, three or four inches of well packed earth, the heaps being of such a shape and so finished as to shed rain.

Seeds of Conifers, usually called Evergreens, though the Larch and Southern Cypress belong here and are deciduous, present some variety. The cones with thin scales, such as White Pine, the Firs, Larches, etc., usually open readily, or will do so when dried in the sun, or by a gentle heat. When the seeds drop spontaneously, they are to be kept like ordinary seeds; if they will remain in the cones, it is better to allow them to do so until wanted for sowing. The cones of some pines require long drying before they will open; Europeans obtain the seeds from the Cluster, Stone, and other pines that open with difficulty, by burying the cones in a sandy place for several weeks; the scales then open readily, and the seed, swollen by the commencement of germination, are sown at once. Red Cedar seeds do not germinate until the second year; these are mixed with an equal bulk of sand, put into a box, and buried in a place where they will not become dry, and sown the second spring.

The Cyclamen as a Window Plant.—Among the less cultivated plants in window gardening is the Cyclamen. When we say, *the* Cyclamen, we refer to the varieties of *Cyclamen Persicum*, of which there are many. It is especially useful in window culture, as the leaves are of themselves beautiful, and the plant would be worth growing for these if it did not flower. The so-called bulb of Cyclamen is really a much depressed stem, flatter than the flattest of flat-turnips, producing roots from the lower surface, and leaves and flowers from the upper. There are three ways of getting a start with Cyclamens; to raise them from seed, to buy imported bulbs, and to get plants from the florists who have grown them from seed. It is out of the season, to talk now about starting the plants from seed, but they may be had from the other two sources. Imported bulbs are shrivelled and flabby, but soon recover if pressed well down upon the surface of a potful of good soil. They do not need to be planted, *i. e.*, buried at all—merely pressed down firmly; be sure to put them in right side up; the top shows small buds, or scars of former leaves. They will soon absorb moisture, and

become plump, roots will strike from the lower surface, and leaves, followed by buds, from the upper surface. Florists who make a specialty of the Cyclamen are usually careful about their seeds, and one is more likely to get plants that have large flowers from them, than to buy imported bulbs. The plants need no special care beyond that required by other window plants; they will continue for a long time to throw up their quaint, knowing-looking flowers, and when these are done with, the foliage will make it worthy of the place it occupies.

The White Grub and Its Ways.

Last August, in Notes for the "Orchard and Garden," p. 325, a brief account was given of the destruction of several acres of lawn. After that was written we visited the gentleman referred to, and examined that portion of the lawn that had not been re-seeded, and saw the men at work removing the old turf and picking up grubs by the *bushel!* Since then we have received many lettters complaining of the work of the grub—some having lost their strawberry plants, others their flowering plants, others their grass—indeed, it makes little difference what the plant may be, for we have known them to cut off the roots of young apple-trees as large as one's finger. These letters, as a whole, show that the writers, if they know what the grub is, have very imperfect ideas of its ways—or modes of life. The first step towards a successful combat is to know the strength and the tactics of the enemy, and though we gave a quite full account of the insect several years ago, our correspondence shows that the subject needs to be presented anew. We find that otherwise intelligent persons do not understand the changes which insects undergo. Not so very long ago a gentleman brought us some beetles—perfect insects—and insisted that they changed into something else, and no argument or assertion would convince him to the contrary. In brief, the changes of insects are always in one direction; we have first the *egg*, then the *larva* (the grub, maggot, caterpillar, or "worm" state); in this condition it makes its growth, which requires all the way from a few weeks to a few years. When full-grown, the larva forms a *pupa* or chrysalis, usually becoming dormant, and in due time it bursts its covering, and comes out a *perfect insect*—as a beetle, butterfly, fly, or whatever its kind. The creature has then completed its career—it does not "turn into" anything, but it lays eggs, and thus the series begins anew. Perfect insects do not grow—little beetles never become large ones, and if they feed it is in many cases by sucking sweets, and they are not usually injurious as perfect butterflies, moths, and beetles, though as to the last there are noted exceptions. This being the routine, let us apply it to the White Grub. This pest is the larva of the beetle (shown in fig. 1) *Lachnosterna fusca*, well known as May-bug, June-bug, and Dor-bug; they find their way into houses in early summer, being attracted by the light. The female beetle lays her eggs in the earth; the young grubs (larvæ) are hatched from these, and go about to find their food. But little is known of their history for the first year; no special damage is traced to them, and it is supposed that they live on small root fibres, the loss of which is not noticed. In their second year they make their presence felt; they appear then to work just below the surface, and as already stated devour almost every root or other vegetable substance they find. At this time they are of the shape of fig. 2; when full-grown, somewhat larger. The body is of a dirty white color, the head is brownish. In the spring of the third year, the grub having made its full growth, it goes into the chrysalis state, and in May or June comes out as a beetle. The perfect insect, or beetle, is also destructive; it collects upon fruit and other trees and devours their foliage. The beetles seem to be quiet in the day-time, but in the evening are very busy; they pair, lay eggs, and the mischief continues. While there are some beetles every year from scattered grubs, the great crop for any particular locality appears once in three years, and one who has observed the year in which they abound, will know when to look for the ravages of the grub. Some think that the White Grub is brought to their gardens in the manure, which is a mistake; the Manure Grub, though of about the same general appearance, belongs to a very different insect, and the two have but little in common. With this brief review of the habits of the White Grub, we will leave the methods that have been proposed for destroying it to be given another month.

Fig. 1.—BUG.

Fig. 2.—GRUB.

Multiplying Strawberry Plants.

With a new and rare variety of Strawberry, it is desirable to multiply it as rapidly as possible. Not only does the nurseryman wish to do this, as a matter of profit, but the amateur who has invested in a few high-priced plants would increase these sufficiently to make a productive bed as soon as may be. Ordinarily, the runners are left to take care of themselves, and it sometimes happens that many fail to strike root; when the soil is too dry, or the plants are in a bleak place, and whipped about by strong winds, there will be many failures. With scarce kinds it will pay to secure a plant from each runner—or rather from each bud on every runner, which may be done by fastening them in place with a bent or forked twig, or by laying a clod of earth on the runner. Where the failure is from drouth, the soil should be mulched with cut straw, and watered after the runners have been fastened down; cut straw is more convenient than long, for this use, as it may be more readily worked in among the old and young plants. Our old horticultural friend, Sam'l Miller, the originator of the "Martha" and other grapes, writes us from Sedalia, Mo., that owing to an excessive drouth last summer his runners could not take root; he picked off the buds—or young plants without roots—at the ends of the runners, and packed them in damp moss. In a few days roots were emitted, when the little plants were set out in beds, shaded for a time, and they made a satisfactory growth. When the Agriculturist Strawberry first came out, a cultivator of our acquaintance followed a similar plan. When cold weather came, his few plants had many runners that had not taken root; these would be lost, if left as they were, so he gathered them and set them out in a cold-frame; the next spring they were well rooted plants ready for sale or planting.

Winter Protection.—Probably more plants are killed by too much protection than by the want of any covering. Some plants, like the strawberry, are perfectly hardy, yet we advise covering them, not so much to shield them from the cold, as to prevent the frequent freezing and thawing of the soil; such protection should be mainly around, and but little upon the plants, and it is better to not put it on at all until the ground has actually frozen. Shrubs just on the border between tender and hardy were formerly completely bundled up with straw, and if they were evergreens, were often smothered to death, between which and freezing there is little choice. One of the most efficient methods of protecting shrubs of this kind, where the material is available, is to procure boughs of cedar or other evergreen, and set these in the ground close to the bush or young tree to be protected. In the absence of evergreens we have succeeded well by placing naked branches or brush around the half hardy plants, and working in straw among them. The object is to ward off severe winds, to give partial shade and to modify sudden changes of temperature, yet, at the same time, to allow a full circulation of air. Hardy herbaceous plants bloom all the stronger for being covered in winter; for this purpose, leaves serve an excellent purpose. When first put on, they are liable to be blown about; sprinkle a little earth over them.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

How Common Lamps Waste Light.

Did it ever occur to the reader, that most of the common lamps actually waste one-half or more of all the light produced, and are therefore doubly expensive? The flame gives off rays from its surface; but if we half cover the flame, half of the rays are intercepted and lost. This is just what is done in a majority of lamps. Figure 1 shows this. The metal cap, *a*, partly covers the flame; only the portion that rises above *a* gives out light to the room. In several of the lamps now made, this loss is saved by omitting the metal cap, and having the glass chimney set down below the bottom of the flame, as in figures 2 and 3. Such an arrangement is equivalent to saving half the expense of oil.—The Argand principle is of great utility. This is an arrangement for having a current of air pass

Fig. 1.

Fig. 2.

up through the *center* of a circular flame, furnishing oxygen to its interior. The combustion is much more intense, and the light correspondingly greater.

Home Topics.

BY FAITH ROCHESTER.

Warm Underclothes for Children.

The cool days that come now, more and more wintry in their suggestions, set mothers to thinking about the winter clothing of the family. Let no thoughtlessness or negligence hinder the preparation of warm under-garments, especially for the children. We used to think that little boys had much the advantage of little girls, in having warmer and more equal clothing over their whole bodies. But the fashion of short trousers leaves their legs below the knees no better protected than those of little girls—unless, indeed, they are more likely to be provided with long under-drawers. Many fashionably-dressed little boys are not so provided for. Through ignorance or indifference, their mothers sacrifice future health and manly beauty to present prettiness, and in this unreasonable and unkind manner, the majority of little girls are treated. No one can tell how much this has to do with the general ill-health of women. The children are supposed to be growing "tough," but it is often the case that the vitality is too much drawn upon and the constitution gradually undermined, so that many children who seem to be enduring all things wonderfully, are really among those who "die in the toughening," though the death is long postponed and approaches gradually at last. Make the under-garments of flannel or fleecy cotton flannel, and let them cover the body from neck to wrists and ankles. They may be made all in one

Fig. 3.

piece, or in two pieces, as preferred. For young children it is often more convenient to have the lower garments made separate from the upper, and buttoned to them. But the whole garment is easiest made and managed for most children, much

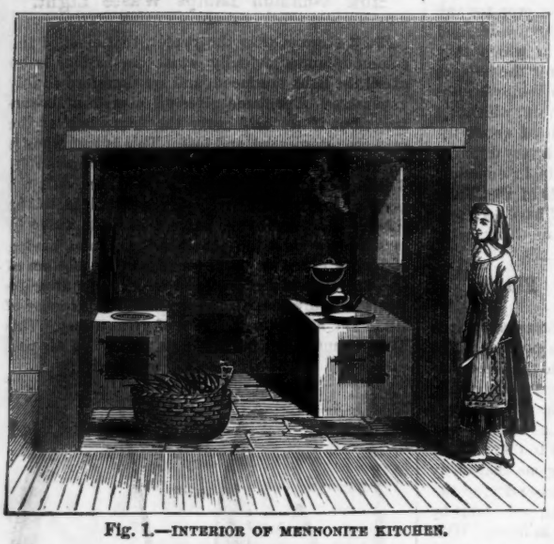


Fig. 1.—INTERIOR OF MENNONITE KITCHEN.

like the long night-drawers. The legs should gore down to the ankles inside the stockings by both an inner and outer seam. The one on the inside of the leg should be left open a few inches to lap over smoothly under the stocking. It should always reach down inside the shoe-top. After this garment has been put on the child, there comes next a stout waist with buttons around the bottom, to which are attached the dress-drawers (whether of white cotton or of colored flannel) and the petticoat. The latter may be basted strongly to the waist for the reason, if both are colored, seldom needing washing. To the side buttons of this waist (under the arms) are buttoned the stocking supporters or garters, either those patented and bought at the shops, or home-made garters—strips of elastic tape with button holes in the wide cloth binding at each end. One end of this garter buttons at the waist, the other fastens on a button upon the side of the stocking outside the leg. Then comes the dress. If all button behind, you can dress and undress the child very quickly after the shoes and stockings are taken off. Unbutton all of the garments behind, and slip them all off together, and replace the set of day garments by a warm well-aired night-gown. We mostly use soft thick factory cloth (or unbleached muslin), and I suppose other poor folks do the same, but flannel for winter is to be preferred, especially for little ones apt to get uncovered in bed. During the night the set of day garments may be placed so as to be well aired in the inside, without separating them, and in the morning the child can slip them on all together with ease. Perhaps I have told all this before, but I see more and more how little is known or thought by mothers, about the healthful dressing of children in cold weather, and I hardly think I need apologize for returning to the subject.

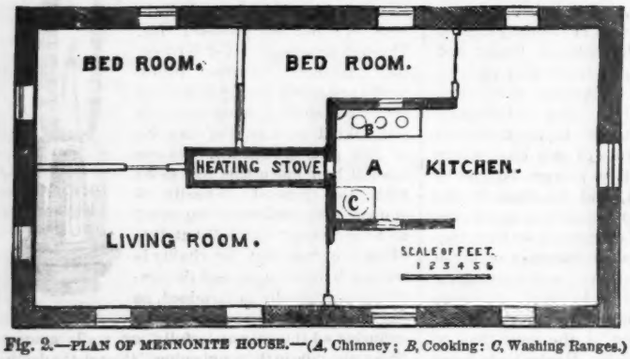


Fig. 2.—PLAN OF MENNONITE HOUSE.—(*A*, Chimney; *B*, Cooking: *C*, Washing Ranges.)

Sunny Rooms.

I told a neighbor, lately, that the chief objection I had to a house under consideration as our future residence, was that I feared the sun would not shine into the rooms enough to suit me. She laughed as though that was a new idea to her, and quite whimsical. The blinds on the house were not objectionable, as I should leave them wide open, except on rare occasions. But the wide verandas on the east and south sides, would totally exclude the friendly sunbeams from the common sitting room. Even in summer I should not like that, as there are many cool days when sunshine is far better than a fire. My neighbor said that it always made her feel nervous to have the sun shine directly into her rooms. Now sunshine is one of the best remedies for nervousness, but I understood my neighbor to mean that the prying sunshine searching out every speck of dust and tiny cobweb before concealed by habitual shade, made her feel uneasy. Moreover, the colors of the carpet must be preserved, and sunshine fades them. And so my neighbor pays the doctor for her medicine instead of taking it as a free gift from Heaven in the bright sunshine and pure air—for I think she dreads air as much as sunshine, except when she goes out doors occasionally to get them. I like a broad piazza or generous porches about my house, but I want my windows free from even too much curtain. Unless in hot weather, when almost anything ails you, and you feel disinclined to out door exercise, the best thing you can do is to sit down in the broad smile of a sunny window and let the sunbeams put new life into you. If your feet are cold, the sun will warm them more thoroughly and permanently than a fire, especially if you take off your shoes and put your feet on a stool or chair in the full sunshine. For neuralgia I know nothing better, in connection with fasting from one or two meals, than to lie in the full sunshine, all but the top of your head, which may be protected; cover up warm if the room is cold, but let everything about your body be loose and well aired.

Bread Pancakes.

For those who have milk, a convenient way to use up old bread is, to make it into pancakes. This is a good way to use sour bread also, as a trifle more soda than the sour milk requires to neutralize it will sweeten the sour bread too. Soak the bread crumbs, (a quart or less) for a few hours in as little sweet milk as will answer. Then mash them with a four tined fork, or otherwise reduce them to an even consistency. Add a teacupful of sour milk, a half teaspoonful of soda dissolved in tepid water, and flour enough to make a batter just right to bake the cakes light without being too thick and hard. Try a little on your hot buttered griddle if you are in doubt about it. Eggs are not necessary to make light good wholesome pancakes of this kind, but when not too expensive, they add greatly to their delicacy and goodness.—Two, three, or four eggs, as you can spare them.

How the Mennonites Warm their Houses and Cook with Straw as Fuel.

The European Mennonites, whose religion prohibits bearing arms, have within a few years come to this country in large numbers, and have formed already prosperous colonies in Kansas and other Western States. In their new homes they follow their former pursuit—farming, and many of them brought with them the implements they formerly used, affairs so quaint and cumbersome, that they appear more like a collection of antiquities than articles for real use. Besides their farm implements, they brought over their household effects, conspicuous among which are a large clock to hang upon the wall, and a huge, curiously ornamented chest to hold the household treasures; these are to be seen in almost every Mennonite home. Though they could not well bring their enormous stoves to their new homes, they have brought their domestic customs with them, and the house in Wisconsin and Kansas is heated, and their meals are cooked in the same manner that they were in the old home in Russia and Prussia. Mr. H. Worrall, of Shawnee Co., Kas., sends us several remarkably neat sketches of Mennonite interiors, made with special reference to their methods of warming and cooking by the use of such an unusual fuel as straw. A portion of his sketches have been engraved and are given here. He also furnishes the following description:

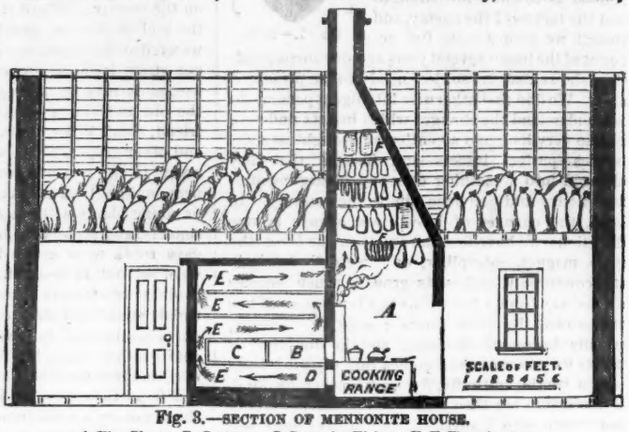


Fig. 3.—SECTION OF MENNONITE HOUSE.
A, Fire Place; *B*, *C*, Ovens; *D*, Door for Firing; *E*, *E*, Flues in Stove.

"'The Americans burn money, we burn straw,' says the Mennonite settler; how they manage to keep warm in winter, and to cook the year round with no other fuel but loose straw, is a mystery to the average American. The Mennonite immigrant, when choosing a locality, is quite unconcerned at the total absence of timber, and will settle many miles from wood or coal, with indifference as to the fuel question, in localities where an American would never think of making a farm. He sees fuel for the first year in the miles of grass about him, the second and succeeding years he will have the straw from his crops, and straw stacks are his favorite substitute for the wood-pile and the coal-bin.

"We first saw straw in use for fuel at the house of a Russian Mennonite bishop in the colony in McPherson Co., Kansas. Dinner for four of us was to be prepared. A vigorous young Mennonite girl vanished with a bushel basket, and returned with it full of loose straw, then placing her kettles, etc., on the top of the cook range, fig. 1, opened the fire-door, and thrust in two large handfuls of straw, touched the match, closed the door, and the kettle commenced singing almost immediately; in about two minutes the door was again opened, and two more handfuls of straw were thrust in and the door closed. Our dinner consisted of ham, eggs, potatoes, Russian waffles, and excellent coffee, all cooked in less time than an ordinary stove could have been made 'hot for biscuits.' The fire was 'dead out' before the dinner was half consumed,

and the house none the warmer for the fire, the surplus heat all escaping through the broad chimney.

"The cooking place and doors of the straw stove that heats the building, are all in the base of the chimney, which is eight feet square, with a stone floor; the walls are vertical for about 8 feet, when they are gradually brought in, reducing the interior of the chimney to about 12 inches at the comb of the roof. Figure 3 is a lengthwise section of a house of this kind. The upper portion of the chimney is the family smoke-house, in which are stored hams, shoulders, sides, and festoons of sausages hung on poles, permanently set in the walls, access being had to them by a ladder. On one side of the base is a large cauldron, for wash days, set in a furnace of adobe or *sun-dried* bricks; on the other side the cooking-range, also of adobe, having a sheet-iron top, with holes cut for the pots and kettles; both ranges, that for washing, and the one for cooking, have a flue of adobe four feet high.

"The heating stove, seen in section in fig. 3, and in the ground-plan, fig. 2, is 9 feet long, 8 ft. 6 in. high, and nearly 3 ft. wide, and forms part of the partitions of the three rooms heated by it. The ovens in this stove are formed at top and bottom of narrow plates of rough cast iron, set loosely in the stove walls, to admit of expansion and contraction, the doors are of sheet iron, and the walls two bricks thick. In ordinary winter weather, fire is made in the stove every morning, when two good armfuls of straw is consumed in from 20 to 30 minutes, this heats the stove sufficiently for the whole day; in very cold weather, the fire is made two or three times each day, burning an equal amount of straw at each firing. So soon as the fire is out, the flue connecting the stove with the chimney is carefully closed by a damper, in order to retain the heat. Bread is baked in the ovens, and also in the fire chamber of the heating stove, where it is placed, immediately after firing, on a wrought iron stool, which will keep it above the ashes of the straw.

"The most primitive cooking arrangement was seen in Harvey Co., it being a 'hearth,' like that in figure 4. This is merely a block of adobe or masonry, two feet high, built in the base of the ordinary style of chimney. The cooking is done on this by building a fire with straw and corn-cobs under each cooking vessel, much the same as with persons camping out. The material used in the construction of these straw-burning stoves is brick, stone, and adobe; brick is preferred, next stone and adobe for economy in the first construction.

Fig. 1.—DESIGN FOR TRIMMING A ROOM.

Fig. 4.—MENNONITE WOMAN COOKING AT A HEARTH.

Household Notes and Queries.

"SCOURING-BALLS"—OX-GALL.—Mrs. "V. L. A.," Akron, O. These are very old affairs, much more used in England than with us, where they have been superseded by various liquid cleansing compounds. The cheaper kinds are simply Fuller's Earth, but the best are made of Fuller's Earth, soap, and ox-gall, made into balls, and dried. The active ingredient is ox-gall, which is quite as well used alone. It is an excellent article for removing all grease-spots from silks, etc., as it will unite with the grease without injury to the fabric. It may be used fresh, as obtained from the butcher, or the "prepared gall" may be had at the drug stores.

POLISHING COLLARS AND BOSOMS.—"M. J.," Hot Springs, Ark. No "recipe for starch" will be of much use in polishing linen, without the right kind of an iron rightly applied. A small lump of spermaceti or white wax, or a little gum arabic, added to the starch, is thought to help, but the polish mainly comes from the iron. What are known as polishing irons have rounded corners, and the surface has a high polish; hard rubbing and repeated of the starched linen with these brings the smooth shining surface seen in new shirts. Irons of this description are kept at house-furnishing and hardware stores.

SALT RAISING.—This must be set very early in the morning, if it is wished to bake the same day; set a sponge as follows: one quart of warm water, or milk and water; one tea-spoon salt; one-half tea-spoon soda; flour to make a soft batter; let it raise four hours; then sift two quarts flour into a pan and pour the sponge into the center, add one quart warm milk, and mix in flour enough to stiffen. Let it raise one hour—mould into loaves. Let it raise once more and bake in a rather moderate oven.

WHITE SPONGE CAKE, by Mrs. "S. A. R."—The whites of 11 eggs beaten to a stiff froth, 1½ glass of white sugar, 1 glass of flour, 1 teaspoonful cream of tartar; flavor with lemon, to taste; bake in half an hour; sift the flour two or three times, so as to have it light as possible. Do not grease the pans you bake in, but when the cake is well baked, turn the pan top down, supported by something, and the cake will drop out in a short time. We suppose from directing Cream of Tartar, the omission of soda was accidental; either half as much of this should be added or the Cream of Tartar omitted.

Fig. 3.—TO HANG ON THE WALL.

Christmas Decorations at Home.

The remarks last month on Christmas Decorations had special reference to beautifying churches, but much that is said there as to ways and means will apply equally well to home decorations. Whatever may be done with the church, where the work, however elaborate, will be seen for but a few hours, let the home by all means be made bright and cheerful in this holiday time. Whoever visits New York City within a week of Christmas should not fail to make a tour of the streets near Washington Market, and see the immense quantities of evergreens on sale. There are great piles stacked in the streets and on the walks, and the whole neighborhood has for the time an unwonted fragrance of the woods. The purchaser can find large and small trees, short and long wreaths, with ready-made rings, crosses, stars, and many other devices. The decoration of the house may be as simple or as elaborate as one chooses; some do nothing more than to place a green wreath at each window facing the street, while others make carefully wrought designs for the principal rooms. Slender wreaths may be used in a great variety of tasteful decoration; the best material for these is the Lycopodiums or Club Mosses, especially the one known as "Ground Pine" or "Bouquet Green," as its rich dark color and finely divided branches especially adapt it to this use. Suggestions for making wreaths were given last month; they may be hung over pictures, festooned along the cornice, and be worked into numerous tasteful shapes. In towns and cities the room is usually lighted with gas, and the chandelier forms a central point for decoration which should be treated with special care. But every farm-house can have some cheerful natural ornament, even if it be but branches of evergreens.

Fig. 2.—TO DECORATE A CORNICE OR DOORWAY.

LETTERS FOR MOTTOES

are cut out of stiff brown paper, and should be of that style of letter known to printers as gothic, the forms as seen in this specimen, are very **SIMPLE,** and may be cut out by those who have little skill in lettering; they appear distinct and bold when covered with green. Holly, the best material for covering letters, is very rare with us, except in a few localities; small twigs of Arbor Vitæ and Box may be used, as may the leaves of Laurel (Kalmia), Rhododendron, Inkberry, or whatever broad leaved evergreen the locality may afford. The green is to be sewed to the paper pattern with dark green or black thread, and the edges kept very even to preserve a well-defined outline. Sometimes it is desirable to use white letters on a back-ground of green or other dark color; these may be cut from stiff white paper or card-board. It is recommended to cover the letters with mucilage of gum Arabic, and sprinkle them thickly with rice grains. This is said (we have not tried it) to give the letters a rich appearance. Miss Hassard, who is the great authority on floral decoration in England, makes use of perforated zinc as the foundation for her

MORE ELABORATE DESIGNS,

figs. 1 and 2 being from her work on "Floral Decorations." Perforated zinc is sheet zinc filled with small holes, after the manner of perforated card-board, which allow the leaves to be sewed to it. The engravings represent designs to go around the upper part of a room, along the cornice, or over a large doorway. Another of Miss H.'s designs is given in figure 3; this is also made on a foundation of perforated zinc. Such figures as this may be hung against the bare wall between pictures, over the mantle-piece, or wherever there is suitable space.

PICTURE AND MIRROR FRAMES

may be ornamented by placing a wreath to cover the cord (it may be tied to it if necessary), and long enough to hang down the sides of the frame. A very pretty effect is produced by making a frame of light lath, and neatly covering it with evergreens, bound on as directed last month for wreaths. This should be of the proper size to slip upon the frame, and it may be held in place by a fine wire and small tacks, which may be driven into the back of the frame without injury. If preferred, a frame of green may be made, to be suspended in front of and quite hide the proper frame of the picture; fine wire will come in play here as in many other cases... Where living plants are at command, they may be introduced as a part of the decoration with good effect, and for this purpose it is not necessary that they should be in flower.

FRUITS, FLOWERS, ETC.

Bits of color may be introduced in contrast with the green, and for this purpose bright colored berries seem more appropriate to the season than flowers. Berries of

the Black Alder, or Winterberry, which is own brother to the Holly, are very brilliant. Holly berries, the capsules of Climbing Bitter-sweet, or Wax-work, and other bright fruits, may be used. If flowers are employed, they will naturally be those of the everlastings, such as Helichrysums, and imported Immortelles. Scarlet and crimson colors are to be preferred; yellow, if used at all, should be introduced very sparingly, as it gives a garish effect, out of place at this season. Some choice design may occupy a conspicuous position on the mantel-piece, and for this, if there is a greenhouse, some nice bits of foliage may be spared, such as leaves of the Aucuba (Gold-dust Plant), Laurustinus, Bay Laurel, or whatever broad-leaved evergreen can part with a few leaves without detriment, not forgetting Ardisia, which has both leaves and berries. In such a design the leaves and berries of the Creeping Partridge-Berry (*Mitchella*) and Checkerberry, with bright colored lichens, may be worked in. A very pretty effect may be produced by "frosting" some parts of the decoration. What is sold at the paint and drug shops as "frosting," is glass in the thinnest possible scales; this is to be broken into small fragments and sprinkled upon leaves that have been touched with gum water; it glistens like frost.

BOYS & GIRLS' COLUMNS.

The Young Microscopist's Club.

It is rather too late in the year to talk about plants to most of you, but as I began to tell you a little about what are called the lower plants, and there is but one family left to be noticed, I will say something about that to complete the list. I have only tried to show you enough about these plants to allow you, especially with the help of your Microscope, to know a moss from a fern, a lichen from a moss, and so on. We now come to the *Algæ*—the plural for *Alga*, the Latin word for sea-weed. As we have no good common name for these plants, you must use the scientific one, and when you pronounce it, recollect that the *g* is hard in *Alga* and soft in *Algæ* (as if written *Algah* and *Aljee*). "Sea-weeds" will hardly do as a common name for these plants, for while all true sea-weeds are *Algæ*, all *Algæ* are not sea-weeds, a great number belonging to fresh water. You will remember that I told you that all these plants, the club-mosses, the ferns, the mosses, the fungi, etc., were called *flowerless plants*, as they have no real flowers and seeds; the *Algæ* are also flowerless. Among them we find the most minute and simplest of vegetable forms. As a general thing,

Fig. 1.

ALGÆ ARE WATER PLANTS.

The few that do not live in the water are found in moist places. They inhabit both salt and fresh water, and like the other flowerless plants, have minute bodies called *spores* to answer for seeds. We find here a wonderful range in size, some being so small that you could hardly see them with your Microscope, up to some giant sea-weeds, the tallest—or longest—of all plants, over 700 feet in length. Being surrounded by water from which they absorb nourishment, they have no need of roots to take up their food, and while some have what appears like a root, it is only to anchor them, while many float free in the water. I have already told you that all plants were made up of *cells*, and pointed out in a former talk how, by making a thin slice of corn-stalk, and of a young twig of maple, you could see these cells—sometimes globular or egg-shaped, sometimes longer and thread-like, but always, in every plant and every part of a plant, the Microscope shows nothing but cells of some kind, and their contents. Some of the Algæ are so small that they

Fig. 2.

CONSIST OF A SINGLE CELL;

a mere bag without opening, and so minute that your Microscope would but just allow you to see it. I give some engravings to show how a plant of this kind looks with a very powerful glass. The green scum found in damp places is often an *Alga* of this kind. When largely magnified it is found to be made up of bodies like fig. 1. A tiny transparent bag, filled with greenish matter. A little thing—but to me one of the most wonderful things in the world! For here you have a *whole plant*, which can do all that any plant can—*i. e.*, it can live, grow, and multiply. It has no root, stem, leaves, or flowers, and yet is as much of a plant (in one sense) as those having all these parts. When one of these plants gets its full size—if we can conceive of so minute a thing having size—the green matter within slowly divides, as in fig. 2, and these halves divide again, as seen in fig. 3. A covering forms over each of these tiny green masses, and they really become young plants, just like the original, except in size. In time the wall of the mother cell breaks away and lets out these little ones; they soon grow to the full size, and go through with the same changes again; thus these minute plants increase very fast. It is only a small number of the Algæ that are so small and simple as this. Many, like the Brook-silk, described in April last, consist of many long cells placed end to end, to form a thread (fig. 4). In others the cells are not only placed end to end, but side by side, to make a thin sheet or plate. Those who live near the sea-shore can find a great many forms of Algæ, from the delicate kinds called "Sea Mosses," up to the coarse Rock-weed, and still larger Sea-weed called Kelp. That which is sold in the shops as

Fig. 3.

Fig. 4.—BROOK SILK.

"IRISH MOSS"

is a good example of one of the medium-sized sea-weeds, and by soaking out a bit of this you can see its real shape. The larger sea-weeds have fruit-dots, or places to hold their spores... You see what a wonderful variety plant life presents—from the minute Alga just described, up to the towering oak and pine; the Alga is but one simple rounded cell—the tree is only a mass of cells, some round, some long, and of different sizes, but all so minute as to require a microscope if we would see them... Among other queries, one boy wishes to know if our Microscope

WILL SHOW THE CRYSTALS IN SNOW.

I understand what he means; he has read of snow crystals and would like to see them. He can do so if he is patient and watches his chance, as all snow does not show them. The large flakes are confused masses, and do not show the crystalline form. It is only when the snow comes down so fine that it hardly makes any show in the air, but sifts down dry and almost dustlike, that you will find crystals. If you find snow on your coat sleeve as very minute dry spangles, you can see, without a glass, that it has a regular form, and if you use the glass you may see some of the forms shown in fig. 5, or others much like them, for there is a great variety among them. Sometimes the snow will be all mere six-sided plates, as shown at the left-hand in the middle row. I have seen them much like that at the right-hand of the middle row, and like the one under it with the spaces between the arms not so deep. The more beautiful crystals in the engraving are from drawings made in the Arctic regions. You must recollect that you can not take the snow crystals to your Microscope in a warm room and examine them at your leisure, but you must take your

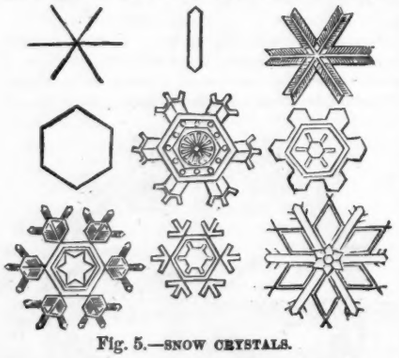


Fig. 5.—SNOW CRYSTALS.

Microscope to your crystals. The glasses must be removed from the stand and used as a hand glass. Catch the snow on a piece of dark woollen cloth, and when you examine the crystals, try to keep your breath away from the glasses, else it will collect on them as frost and prevent you from seeing anything, and also melt the snow.

Our Puzzle-Box.

CROSS-WORD.

My first is in blossom but not in fruit,
My next is in wardrobe but not in suit,
My third is in larder but not in food,
My fourth is in lovely but not in good,
My fifth is in linger but not in wait,
My sixth is in happy but not in great,
My seventh is in ocean but not in lake,
My eighth is in oven but not in cake,
My ninth is in barter but not in buy,
My tenth is in heaven but not in sky:
The letters, if placed aright, will show
One of our measures, which p'r'aps you know.

BIBLICAL DOUBLE ACROSTIC.

1. A son of Jacob and Rachel.
2. A battle-field of Joshua.
3. A district of Canaan.
4. A scriptural image of slavery.
5. Fifty-five.
6. A tree and its fruit.
7. A village of Palestine.

The primals and finals give the name of two celebrated ancient cities. ISOLA.

NUMERICAL ENIGMAS.

1. I am composed of 19 letters:
My 5, 16, 17, is a tree.
My 2, 3, 15, 9, is an animal.
My 7, 8, 12, 16, we have been advised to let alone.
My 17, 5, 13, 1, 9, is a kind of fruit.
My 14, 1, 6, 19, 11, is an animal.
My 10, 11, 9, 4, 18, 6, is a city in Colorado.
My 18, 6, 3, 11, is a city in Pennsylvania.
My 14, 3, 9, 10, 15, 1, is one of a certain race of men.
My whole is an American poet. K. P. N.

2. I am composed of 13 letters:
My 1, 5, 12, 11, 13, is a species of heron, and a name for rice not divested of the husk.
My 8, 9, 7, 3, is a drink used by the peasants of Russia.
My 6, 10, 1, is a household article not as much used as formerly.
My 4, 2, 6, is a boy's nickname.
My whole is a bay on the coast of one of the United States. C. W. SHELMIRE.

3. I am composed of 18 letters:
My 11, 13, 5, 17, 14, 15, is a fruit.
My 2, 18, 6, 3, 7, 14, 1, 8, may be seen on the face.
My 11, 10, 9, 2, 17, is a beverage.
My 4, 16, 12, 13, 15, is a fabric.
My whole is often consulted. L. N. J.

PUZZLE.

From what word can you take "six" and transpose the remaining letters into the fruit of an evergreen?

CHARADE.

When you come in from walking
My first doth meet your view;
Mind do not miss my second
Whatever else you do:
For, in this frosty weather,
With care my second take,
As, if you stumble on my whole,
You might produce an ache. JOS. H. BIRD.

ANSWER TO JOE LIVINGSTON'S PROBLEM.

1 woman at 50c	50
6 children at 25c	$1.50
5 men at $2	10.00
12 persons	$12.00

SOLUTION TO THE PEDESTRIAN PROBLEM.

A takes 5 steps while B takes 4; A, therefore, takes $^5/_4$ as many as B. 3 of A's steps are equal to 2 of B's; A, therefore, steps $^2/_3$ as far as B.—Multiply $^5/_4 \times {}^2/_3 = {}^{10}/_{12}$, which represents the value of A's effort as compared with B's, and makes it plain that A goes 10 miles while B goes 12 miles. Now by simple proportion, if A goes 10 miles while B goes 12 miles, then A will go 25 miles while B goes 30 miles. At 30 miles from the start they are together, and while B was walking that 30 miles, A walked only 25; hence A must have been 5 miles on the road when B started.

ANSWERS TO PUZZLES IN THE OCTOBER NUMBER.

NUMERICAL ENIGMA.—Do unto others as you would have others do unto you.

ANAGRAMMATICAL SQUARE.

S	N	O	W
N	O	N	E
O	N	U	S
W	E	S	T

SUBSTITUTIONS.—1. Walter, waiter. 2. Milk, silk. 3. Brass, grass. 4. Take, lake. 5. True, tree. 6. Mare, mire. (M. A. answers No. 6 with "fool, pool.")

CONCEALED NAMES.—1. Amy. 2. Bertha. 3. Ellen. 4. Ada. 5. Delia. 6. Eve. 7. Esther. 8. Emma. 9. Dora.—Seth. 10. Frances.

PI.—Hasty resolutions seldom speed well.

CONCEALED MAGAZINES AND PAPERS.—1. Post. 2. Herald. 3. Times. 4. Press. 5. Sun. 6. Harper.

CROSS-WORD.—Merchant of Venice.

SCIENTIFIC ACROSTIC.

N— itr —E	
I— nfusoria —L	
T—ourmalin—E	
R— hodiu —M	
O— r —E	
G— nomo —N	
E— rgo —T	
N— itride —S	

RHOMBOID PUZZLE.

Amen
Even
Ewes
Stop

ABBREVIATIONS.—1. Black, lac. 2. Coney, one. 3. Crate, rat. 4. Elegy, leg. 5. Grape, rap.

ANAGRAMS.—1. Triumphantly. 2. Floundering. 3. Imprisonment. 4. Energetically. 5. Promiscuous. 6. Gooseberries. 7. Disconsolate. 8. Wearisome. 9. Ejaculates. 10. Disobedience.

Puzzles, answers, and such matters as were formerly directed to "Aunt Sue," may hereafter be sent to "The Doctor," No. 245 Broadway, New York.

Some Items About Sugar.

On an average, every man, woman, and child in the United States consumes each year about 30 pounds of cane sugar, and nearly 2 gallons of molasses, besides maple sugar, honey, and other sweets....19 lbs. of pure cane sugar is actually made up of, and can be changed into 8 lbs. of charcoal and 11 lbs. of water! Pure white starch is made up of 8 lbs. of charcoal (carbon) and 10 lbs. of water. Any boy can demonstrate this roughly by putting a small quantity of sugar on a piece of thin iron over a hot lamp or coals, and hold over it a glass jar bottom up. The sugar will change to pure charcoal, while the water will rise up and condense on the inside of the jar, if it be kept cool, and he will get nothing from the sugar but coal and water. The chemist can easily take the 19 lbs.

of sugar and change it into 8 lbs. of charcoal and 11 lbs. of pure water, though he has not yet learned how to put the coal and the elements of the water together to produce the sugar. That requires the action of the living plant....Our sugar comes mainly from the sugar cane grown in the Southern States (most from Louisiana), and from the West India Islands. The canes are somewhat like corn-stalks, but larger, taller, with narrower leaves. The sap or juice of the cane is pressed out between iron rollers, then boiled down to syrup, which crystallizes into sugar grains in large vats....Most of the sugar used in Europe is from the juice of the sugar-beet. It is similar to our cane sugar....The raw sugar is refined chiefly in

Fig. 1.—HUNTERS' CAMP.—A NOVICE TRYING SNOW-SHOES.

Northern cities, by dissolving it, straining it through cloth, and through burned bones, after which it is boiled down until thick enough to crystallize in grains.

The Doctor's Correspondence.

The letters accumulate, and I am surprised as I look back, to find how long it is since I answered any of them. Here is one from "R. J. P.," Mankato, Minn., enclosing a

LEAF WITH BLACK SPOTS,

and he wishes to know about them. I should have mentioned this when speaking about the "Cluster Cups" last month. Those, you recollect, are *Fungi*, small plants living on the substance of the leaf; this which our Minnesota friend sends is a fungus, but of another kind, and this is about all he can learn about it at present....Sometimes youngsters ask questions that are regular puzzles. To answer them one must go a long way back into first principles, and write a treatise on matters in general. One "G.," at Eureka, Mo., has given me several questions of this kind; of these I can try only one now. He asks:

"WHAT IS AIR COMPOSED OF?

I think Oxygen, Hydrogen, and Nitrogen, but how much of each? Is it not the Oxygen in the air which we breathe that keeps up the heat of our bodies? Then if Oxygen is so hot, why is it that a fish which lives in among so much Oxygen, is so cold?"—This question, or rather series of questions, shows a desire to know about things, and that "G." thinks and reasons, but it also shows that he has either not had an opportunity of learning about the air, or that he has been imperfectly taught. Let us see if we can help him in this case. Firstly, as to

THE COMPOSITION OF AIR.

Air is *essentially* a *mixture* of Oxygen and Nitrogen, in the proportion of one measure of the first to four measures of the other. You will notice that I make two words prominent by putting them in *Italics*. *Essentially*, for there are other things found in the air: watery vapor or moisture, the amount varying with the temperature, and Carbonic Acid, about one measure in every 2,500 measures of air. A very small proportion you will think, but small as it is, it is very important; I can not tell you more about this now, except to say that it is very necessary to the growth of plants. Still smaller quantities—mere traces of other substances—are also found in the air, but we will not notice them. The other word that I marked is *mixture*. For I wish you to understand that air is

A MIXTURE AND NOT A COMPOUND.

Now how can I make "G." and the rest of you understand this? Let us see. Certain substances are called simple bodies or *elements*. Oxygen is an element, so is Nitrogen—but you can not see these. Sulphur (or Brimstone) is an element, so is Quicksilver (or Mercury), so are Iron and Gold when pure. You all know how Sulphur looks. Well, chemists, let them try their best can not separate it into any other substances—it is sulphur and nothing else. When a substance is found that contains only one kind of matter, and that no skill of the chemist will separate into two kinds, that is called an *element*. Thus far there are about 63 elements. In the air Oxygen and Nitrogen are merely *mixed*, the Oxygen is just as much Oxygen, and the Nitrogen just as much Nitrogen as before. But these elements *unite* to form compounds, and when they do this the compound is quite unlike either element in every respect. Sulphur and Quicksilver unite to form the beautiful red vermillion, quite unlike either. Iron unites with Oxygen, and we have Iron Rust—quite different from Iron—and finally Oxygen and Nitrogen, which, when *mixed* in the air, are breathed, can be made to *unite* and form a most powerful acid—Nitric Acid (Aqua-fortis)—and so changed are they, so different the compound from the elements of which it is made, that the vapor suffocates at once, and the acid dropped on the flesh at once kills and destroys it.

THIS BRIEF LESSON IN CHEMISTRY

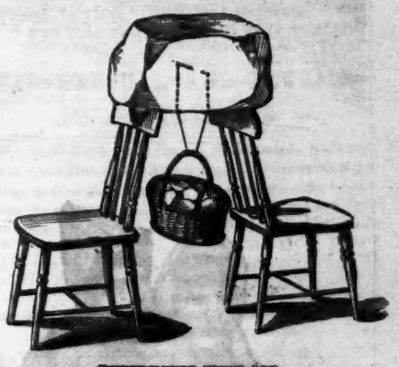
will give Master "G." and the rest of you something to think of. Now for the rest of the question. We may say that the Oxygen in the air we breathe does cause the heat of the body. He then says "If Oxygen is so hot, why is it that a fish which lives in among so much Oxygen, is so cold?"—He does not say so, but having heard that water is a large part Oxygen, he wonders why it is so cold. He starts with a wrong idea.—"If Oxygen is so hot"—but it *isn't hot*, and the rest of his question goes for nothing. Still it allows me to say one more important thing. When these elements unite to form compounds, heat is usually given out, especially when one element is a gas, like Oxygen. Oxygen by itself is neither hot nor cold,

BUT IT PRODUCES HEAT

when it unites with other elements: when it unites with sulphur, heat is given off; when it unites with coal (carbon) we have heat accompanying the change, when it unites with wood, (carbon and hydrogen) there is heat. All our artificial heat comes from the union of oxygen with the fuel.....But to go from heat to cold. Here is "S. C.," of New Jersey, who has been reading about glaciers—those great fields of ice found in the Alps and other high mountain ranges, where there is perpetual snow. They are often several miles long, a half a mile and more wide, and occupying a valley, appear like a river of ice and—what is very wonderful—like a river, glaciers

FLOW DOWNWARD.

What troubles young S. C., is this, if glaciers are *solid ice*, how can they move or flow like a stream, for a book he has read, states that "a hut which Agassiz built on a glacier, moved 486 feet in two years." The flow of the ice of glaciers has been carefully studied by several philosophers, and they differ as to the matter. The cause of the movement is pressure from above, but how solid ice can flow, and go down as it must, over steep places, and still remain solid has long been a puzzle. Discoveries about ice made not many years ago, help explain the glacier movement. It has been found that when ice is under great pressure, it melts, and when this pressure is removed it becomes solid again: also that when two



EXPERIMENT WITH ICE.

smooth surfaces of ice are brought together, they at once freeze together and become solid. This property of ice

IS CALLED REGELATION.

The explanation given of this is hardly suited to youngsters, who must for the present accept the fact that it is so, and that it is so they can prove by a very pretty experiment. Support a block of ice by the ends, two chairs will do, as shown in the engraving; I had occasion to show it some time ago, and set the block upon the bars of a partly open clothes-horse. Pass a copper wire, the size of a knitting needle or finer, over the block, and suspend a weight to it; I used two big stone hammers as they were at hand, but a basket of stones or other weight will answer. The ice under the wire will melt, the wire sinks in, and as it does so, regelation takes place, the water above the wire will at once freeze, and in a few hours the wire will be half way through the ice, with the block just as solid as ever. I tried it on a warm Autumn day, with the thermometer about 70°—for no matter how familiar I may be with an experiment, when I tell you about it, I always try it to see what difficulties you are likely to meet with when you undertake it. Now to apply this to the glacier; it is supposed that where the pressure is greatest, the ice melts, and parts of the mass can thus move and adjust themselves, and as soon as the pressure is relieved the ice becomes solid again—that the flow is a succession of meltings and freezings.

Winter Ways and Sports.

If one would see how the people of the far north live, and how they amuse themselves, they should visit them in winter. Those who travel for amusement go north in

Fig. 2.—WINTER SPORTS—THE HUNTER ON SNOW-SHOES.

summer, and to the far south in winter; this is a mistake, for they see neither part of the country at its best. In the far north, where winter is long and cold, the short summers are very hot, and those who go there in summer, find the people engaged in trying to keep cool, and fail to see their proper home-life and amusements. As

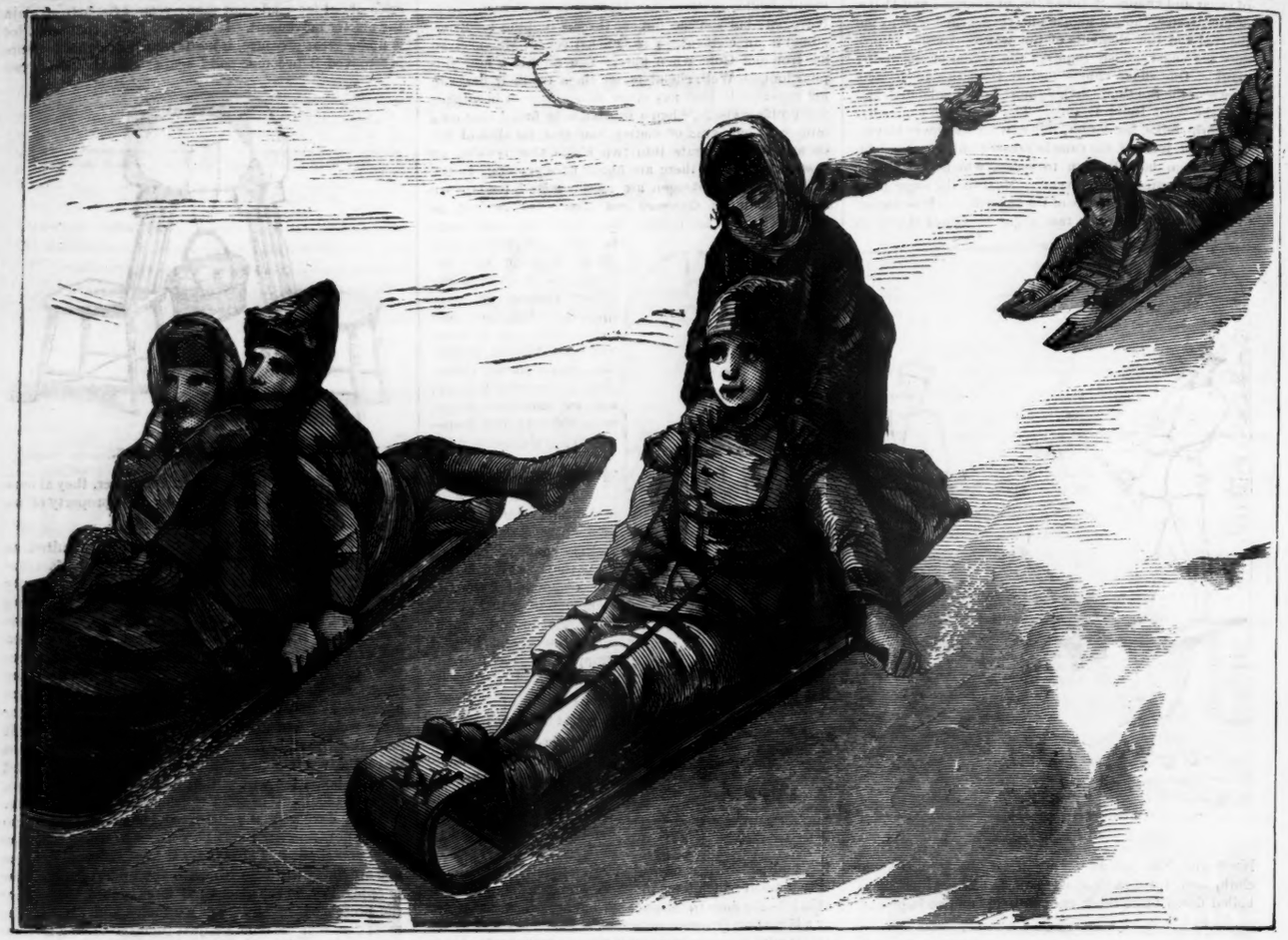


Fig. 3.—A TOBOGGANING PARTY.—A CANADIAN SCENE.

you boys and girls can not go north just now, we must bring some of their winter ways to you. Many of our youngsters live up in the country of long winters, and what we are to say will be an every day matter to them, and they may wonder how it can interest any one to learn about things that are so common to them. But such should recollect that these Boys and Girls' Columns are read by many a boy and girl that never made a snow ball, and never saw the water "go to sleep," as one little girl we heard of described the forming of ice. Our far northern friends this month expect—if they are not already in the midst of snows—not a few inches that will thaw into "splosh" the next sunshiny day, but snows that come to stay; not only are inches piled upon inches, but foot upon foot until the whole country is covered several feet thick with a covering that will stay until spring. At first soft and fleecy, it makes walking almost impossible; soon it settles somewhat, and a crust forms upon it, the crust in time gets so hard that one can walk upon it, but at first it breaks at every step, and the traveller finds it more difficult than before. But people must go from place to place, and as they can not get through the snow, they must get *over* it. So the Indians thought, long before the white man came, and they invented the Snow-shoe. The Indians have not invented many things, but here they were obliged to contrive something, and they hit upon the very thing, one so well suited to its use, that no white man has been able to improve upon it; in fact even to-day an Indian can build a better pair of shoes—so say those who use them—than the most skillful White. Had you never heard of a snow-shoe, and were shown one, it would be a long while before you could guess what it was to be used for; as you can see by fig. 5, it looks very little like a shoe. The frame, light and strong, is of bent ash; the central part is a strong netting of raw hide of the horse or ox; the fine netting is of cotton twine now, but formerly the Indians used bark; there is a band for the toe, and a cord or thong to fasten it to the foot. It is about three feet long, and a foot or a foot and a half wide at the widest part. This is the form in general use by the lumbermen and others, but the Indians often make for their own use a little different style—with toes turned up as in fig. 4. So there are fashions, you see, even in snow-shoes. If you wished to stand on the soft snow, you would lay down a board to keep your feet from sinking in. That is the principle of the snow-shoe—to give a broad surface to the foot, indeed very rough shoes are made simply of a piece of board; but the shoe should be as light as possible, and it is found that the net-work answers the purpose of a solid board affording a broad surface with great lightness. The foot is well protected by a piece of blanket folded over it, and a heavy stocking over this; the toe goes under the strap, and the shoe made fast to the ankle. Being all ready, the novice has then to learn to walk; this is no easy matter at first, for the shoes interfere, and he is very apt to tread on his own toes, and

Fig. 4.—INDIAN SNOW-SHOE.

over he goes. Figure 1 (on p. 475) shows the camp of a hunting party; one of them in making his first trial has met with the usual fate, and he will find it no easy matter to get up without help. But we are told by a friend who has travelled hundreds of miles upon them in the Arctic regions, that one soon learns to adapt his gait to these strange shoes, and can walk with great ease and rapidity. The other picture, fig. 2, of a hunter, shows how the shoes are fastened, and how the foot plays on them. Deer and elk, with their small sharp hoofs, break through the crust at every step, and are readily overtaken by the hunter on snow-shoes. Snow-shoes are necessary for lumbermen, hunters, farmers, and others who have to go about on the snow, but at the same time they are made to afford amusement. The young men have snow-shoe races, and even jump with them on....Here in fig. 3 we have another amusement that is much less like work than racing in snow-shoes. A strange kind of a sled you will think it—but it is not a sled—it is a *Toboggan*, and in the far north tobogganing is a favorite amusement with old as well as young. The toboggan—no doubt an Indian name—is a thin board, turned up in front; the engraving shows the position of the driver, with his steering iron, and that of his passenger. Given a long hill, smooth snow, a moonlight night, and a number of fur-clad boys and girls, and we can imagine that a tobogganing party must be a most lively scene. But the frolic has its lesson: however long and swift the ride—the toboggan must be drawn *up hill again!*

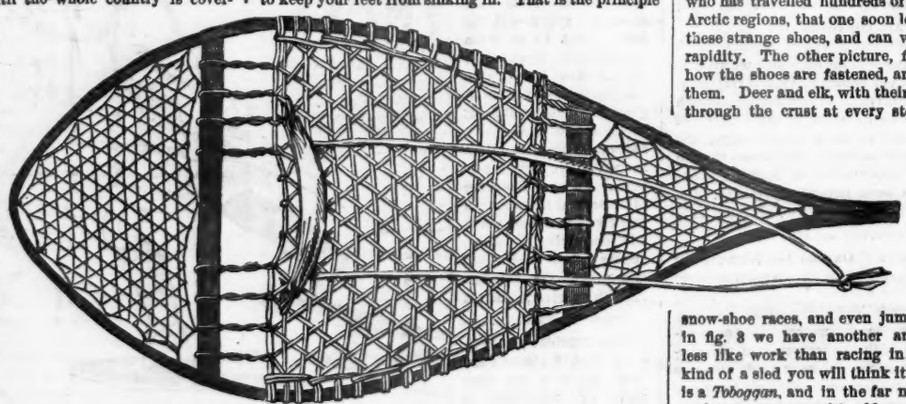


Fig. 5.—FORM OF SNOW-SHOE USED BY HUNTERS.

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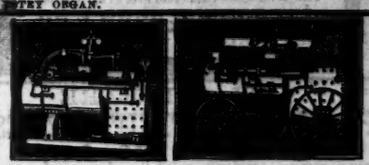

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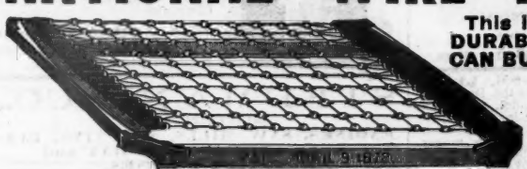

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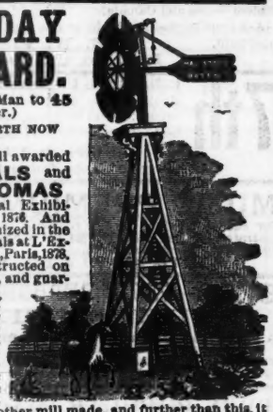

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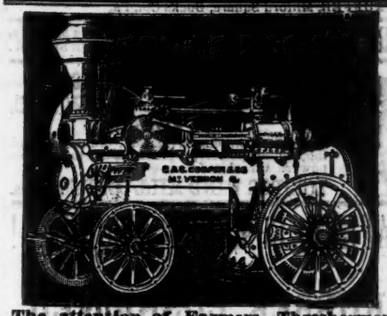

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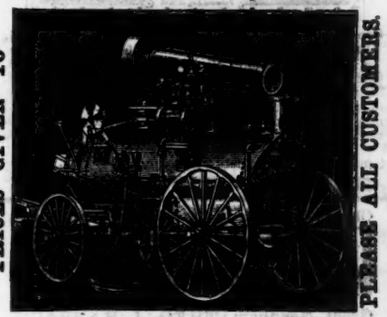

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Perfect satisfaction guaranteed or money cheerfully refunded. It can be sold for $3 in many places, and is cheap at that price. We will send it C. O. D., with privilege of examining at express office, to any point east of Iowa, on receipt of $1, which will be deducted from the bill; or on *receipt of cash in full* will give **free** a box of long range cartridges, or will send by mail for 20 cents extra. Cleaning brush and rod go with every one in a nice box. **Prices:** Ebony stock, **$2.50;** engraved Rubber stock, $2; ivory stock, **$2.75;** and Pearl stock, **$3.50.** This is the biggest and most extraordinary bargain we ever have or shall offer. Remember your money returned if it is not exactly as we state. This Revolver is all English steel, no cast-iron. The country is flooded with cheap, worthless Pistols. Buy a good one while you are about it. Orders filled promptly. **Ray & Gage Arms Co.,** 23 WATER STREET, **Boston, Mass.**

This is just the weapon for Bankers and Police, self-defense, and target practice.

Read the names of actual buyers that we mention. Our references are purchasers themselves, the highest possible substantiation of our statements.

An advertisement of the above Revolver appeared in the October number of the American Agriculturist, and we could nearly fill this page with the names and testimonials of purchasers. Every one is more than delighted. We take the liberty of herewith mentioning the names of a very few of the hundreds of Agriculturist readers who have bought, some one of whom you may know. These are in addition to the names quoted in November issue. H. H. Smith, Ralston, N. Y.; F. P. Holtsman, 54 Wood St., Pittsburg, Pa.; John Raab, Blauvelt-ville, N. Y.; V. W. Powell, Johnson, N. Y.; Wm. Shearer, Youngstown, N. Y.; B. C. Stephenson, Creston, Iowa; Robert B. Teigley, Myerstown, Pa.; Ralph Taylor, Clearfield, Pa.; Jas. Wards, Kendall, Wis.; A. R. Hall, Bristol, Conn.; A. C. Wyand, Eskies Mills, Ind.; Chas. H. Manes, Pine Bush, N. Y.; Sumner Howard, Potsdam, N. Y.; E. Wilson, Dobb's Ferry, N. Y.; L. F. Inance, McKeen, Pa.; W. B. Lewis, Fairchille, Va.; Stephen T. Jamison, Ophir, Cal.; E. G. Chapell, Pembroke, Me.; M. A. Ward, Turner's Falls, Mass.; Geo. T. Wait, Bangor, N. Y.; Wm. Glen, Owen Sound, Ont., Can.; M. W. Nourse, Northfield, Minn.; J. S. Garrison, Cape May City, N. J.; Ira Hunt, Clarksburg, Va.; J. A. Sears, Valley Mills, Tex.; Louis Strack, Warsaw, Ills.; W. B. Cliff, Upper Alton, Ills.; Clark Hickok, Danbury, Conn.; Sol Miller, Mechanicsburg, Pa.; Jno. Baught, Dansmore, Pa. Dozens more could be added. *"The proof of the pudding is in the eating."* Our references are **purchasers themselves.** The following notice appeared in the *Saturday Evening Post,* Oct. 5, 1878, direct from the editor's pen, and more than substantiates any statement we make regarding this remarkable and unequalled bargain.

We have examined the Alexis Revolver, advertised by another column, and take pleasure in recommending it to our readers. No written description can do it justice. It is all and more than its enterprising manufacturers claim for it. —Editor Post.

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Two, or more, well made, linen shield-bosom, open back, French yoke, unlaundered shirts, all ready to wash and wear, mailed, post-paid, for **50** cents each. **One** sample shirt for 60 cents in stamps or currency. Our Very Best Wamsutta Muslin, very fine linen bosom, open back, extra well made, first-class shirts, $1.00 each.

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A CARD.

We, the undersigned, respectfully announce to our former Agents and patrons that we have SOLD OUT *our business, and that hereafter it will be carried on by the* BISSELL M'F'G CO., *at 42 Murray St., New York, to whom they must apply for a continuation of their agency.*

We also take pleasure in recommending the BISSELL M'F'G CO. *to the favorable notice of all our former patrons.*

Respectfully,

THE GEO. D. BISSELL CO.

NAUGATUCK, Conn., *Oct.* 12, 1878.

SPECIAL NOTICE.

We respectfully inform the public that we have purchased the business of the GEORGE D. BISSELL COMPANY, and have *transferred it from Naugatuck, Conn., to this City.*

We have also changed the name from *"The George D. Bissell Company"* to the BISSELL M'F'G CO., with Office and Warerooms at 42 MURRAY ST., NEW YORK, where all orders will be received.

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Another important change is in the name—from that of *"The Little Washer"* to the FAMILY WASHER AND BLEACHER, *which it absolutely is.*

Respectfully,

BISSELL M'F'G CO.

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Is in use in thousands of families in the United States, South America, Canada, Europe, and Australia. A test of it will establish its merit in any household. It will accomplish what no other washer has ever done. It cleanses thoroughly and bleaches perfectly, without rubbing or injuring the most delicate fabrics, even to lace curtains.

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We want an Agent in every town in the United States. RELIABLE, ENERGETIC MEN can make a business which will pay them well. In writing, please mention the *American Agriculturist.*

Address the

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Explanatory Notes.

Read and Carefully Note the following Items: The Table on this page tells the *name* and *cash price* of each article, and (in last column but one), gives the number of names sent in at the regular price of $1.50 a year that will secure any premium article. (The last column gives the number of names at the lowest club price for four names, that is $1.25 each. Some persons quickly raise large clubs by taking all the names at $1.25 each, or less, and themselves pay the difference, and even thus get the premium articles very cheaply.)....(a) All subscribers sent by one person count, though from several different Post-offices. But....(b) Tell us with each name or list of names sent, that it is for a premium....(c) *Send the names as fast as obtained*, that the subscribers may begin to receive the paper at once. Any one can have any time desired, up to next June, to complete any list, but every premium desired will be sent as soon as earned and ordered....(d) Send the exact money with each list of names, so that there may be no confusion of money accounts....(e) Old and new subscribers all count in premium clubs, but a portion at least should be *new* names; it is partly to get these that we offer premiums to canvassers....(f) One or two Specimen Numbers, etc., will be supplied free, as *needed* by canvassers, (when 3 cents per copy is furnished to pay for mailing), but extra numbers are expensive, and should be used carefully and economically, and where they will *tell*. Other specimen numbers will be sent, post-paid, *to canvassers only*, for 10 cents each. The price to others is 15 cents ...(g) Remit money in Checks on New York Banks or Bankers, payable to order of Orange Judd Company, or send Post-office Money Orders. If neither of these is obtainable, Register Money Letters, affixing stamps both for the postage and registry; put in the money and seal the letter in the presence of the Post-master, and take his receipt for it. Money sent in any of the above ways will be safe against loss.

Illustrated Premium List sent free to applicants.

Table of Premiums

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No.	Names of Premium Articles.	Price of Premiums.	Number of Subscribers required at $1.50	Number of Subscribers required or at 1.25
1	Boy's Tool Chest, (E. T. Horsman)	$1 00	3	5
2	Boy's Tool Chest (do.)	$2 50	5	9
3	Boy's Tool Chest (do.)	$5 00	8	15
4	Patent Magic Pencil (Ludden & Dow)	$1 50	4	7
5	Ladies' Magic Charm Pencil (do. do.)	$2 00	4	8
6	Gents' Magic Charm Pencil (do. do.)	$2 75	5	9
7	Gold Pen, Telescopic Case (do. do.)	$2 50	5	9
8	Gold Pen and Pencil, (comb'd) (do. do.)	$5 50	9	17
9	Little Girl's Wash Set, (C. W. F. Dare)	$2 75	5	9
10	Parcheesi, (E. G. Selchow & Co.)	$1 62	4	7
11	Go-Bang. (do.)	$1 20	3	6
12	Sliced Objects, (do.)	$ 65	2	4
13	Sliced Birds, (do.)	$ 65	2	4
14	Sliced Animals, (do.)	$ 65	2	4
15	Vignette Authors, (do.)	$ 60	2	4
16	Portable Writing Desk, (C. W. F. Dare)	$1 25	3	5
17	Chess Men, (E. G. Selchow & Co.)	$3 20	8	10
18	Walnut Work Box, (C. W. F. Dare)	$1 15	3	6
19	Boy's Wagon (do.)	$4 50	8	14
20	"Our Boys'" Wagon, (Silver & Deming Manuf'g Co.	$8 00	12	22
21	Improved Bracket Saw Outfit	$1 18	3	6
22	Bracket Saw Drill, No. 1	$1 15	3	6
23	Buck-Saw for Boys, (C. W. F. Dare)	$ 70	2	4
24	A Eagle Soap Bubble Toys (E. W. Bliss)	$1 00	3	5
25	Citadelle (Warner & Co.)	$1 00	3	5
26	Companion Autograph Album	$1 00	3	5
27	Embroidery Frame	$1 00	3	5
28	Crandall's Imp. Building Blocks, No. 3	$ 90	2	4
29	Crandall's "District School"	$1 20	3	6
30	Crandall's Happy Family (New)	$2 00	4	8
31	Crandall's Heavy Artillery	$3 00	6	10
32	Crandall's Chinese Blocks	$1 25	3	6
33	Companion Tool Chest, No. 1	$1 50	4	7
34	Knives and Forks (Meriden Cut'y Co.)	$14 75	19	28
35	Knives and Forks (do. do.)	$18 50	24	46
36	Carver and Fork (do. do.)	$3 75	7	12
37	Pocket Knife (do. do.)	$1 50	4	7
38	Pocket Knife (do. do.)	$2 00	4	8
39	Pocket Knife (do. do.)	$2 75	5	9
40	Ladies' Pocket Knife (do. do.)	$2 00	4	8
41	Multum in Parvo Knife (do. do.)	$3 50	7	11
42	Wire Bed Mattress (H. Buckingham)	$12 00	17	32
43	Sewing Machine, (Singer Man'f'g Co.)	$30 00	37	70
44	Sewing Machine (Domestic S. M. Co.)	$45 00	52	94
45	Sewing Machine (Remington)	$50 00	60	110
46	Sewing Machine (Wheeler & Wilson)	$60 00	70	130
47	Aquapult (W. & B. Douglas)	$9 00	13	25
48	Self-adjusting Gold-plate Watch Key, (J. S. Birch & Co.)	$1 00	3	5
49	Pocket Tool Holder (Miller's Falls Co.)	$1 00	3	5
50	Houchin's Imp. Pat. Pocket Cook Stove	$1 25	3	6
51	Payson's Indelible Ink—Pen, etc.	75	2	4
52	Tubular Foot Lathe, No. 1, (Useful Machinery Co.)	$20 00	26	48
53	Piano, Splendid 7-oct. (Steinway & Son's)	$650 00	600	1200
54	"National" Organ (G. A. Prince & Co.)	$150 00	150	300
55	Universal Clothes Wringer, (Metropolitan Wash. Machine Co.)	$7 50	12	21
56	Turn-table Apple Parer (Goodell Co.)	$1 00	3	5
57	Climax Apple Corer & Slicer (do.)	$1 00	3	5
58	Family Cherry Stoner (do.)	$1 00	3	5
59	Bay State Apple Parer & Slicer (do.)	$1 50	4	7
60	"Saratoga" Potato Peeler & Slicer (do.	$1 00	3	5
61	Moore's Floral Set (Moore Man'f'g Co)	$1 00	3	5
62	W. S. Blunt's "Universal Force Pump"	$12 00	18	34
63	Tea Set (Middletown Plate Co.)	$70 00	70	130
64	Ice Pitcher (do. do. do.)	$18 00	18	34
65	Syrup Cup with plate. (do.)	$6 25	10	18
66	Child's Cup (do.)	$3 50	7	11
67	Butter Cooler (do. do.)	$6 50	10	18
68	Pickle Jar and Fork. (do.)	$5 00	8	15
69	Cake Basket (do. do.)	$7 50	12	21
70	Cake Basket (do. do.)	$10 00	15	28
71	Casters (do. do.)	$5 25	8	16
72	Casters (do. do.)	$7 50	12	21
73	Casters (do. do.)	$10 50	15	29
74	Twelve Teaspoons (Meriden Cutlery Co)	$7 25	11	20
75	Twelve Tablespoons (do. do.)	$14 50	19	37
76	Twelve Table Forks (do. do.)	$14 50	19	37
77	Child's Knife, Fork & Spoon (do.)	$3 00	6	10
78	French Cook's Knife, Fork, & Steel	do. $3 75	7	12
79	Case of Scissors (U.S. Steel Shear Co.)	$4 00	7	12
80	Family Scales (Fairbanks & Co.)	$14 00	19	36
81	Men's Pure Gum Knee Boots, (Candee)	$4 25	8	13
82	Boy's Pure Gum Short Boots, (do.)	$3 00	6	10
83	Household Press, (W. A. Boardman)	$2 00	4	8
84	Matthews' Garden Seed Drill, (E. & S.)	$12 00	18	34
85	Cahoon's Broadcast Seed-sower	$6 00	9	18
86	Woodruff's Patent Portable Barometer, (Square Case.)	$12 00	17	32
87	Woodruff's Patent Portable Barometer, (Turned Case)	$8 00	12	22
88	New Hybrid Spring Wheat, "Champlain," 3 lbs., (B. K. Bliss & Sons)	$2 00	4	8
89	New Hybrid Spring Wheat, "Defiance," 3 lbs., (Bliss)	$2 00	4	8
90	Breech-loading Pocket Rifle (Stevens)	$14 00	19	36
91	Double Barreled Breech-loading Gun. (E. Remington & Sons)	$45 00	53	94
92	Creedmoor Long Range Rifle (do.)	$100 00	100	200
93	Creedmoor Long Range Rifle (do)	$80 00	88	170
94	Creedmoor Long Range Rifle (do)	$60 00	70	130
95	Shot Gun, breech-loader. (do.)	$18 00	23	44
96	Archery Goods, Lancewood Bow and half dozen Arrows	$1 50	4	7
	(See Description, for other Archery Goods.)			
97	Canvas Gun Cover, (Thomson & Sons)	$1 50	4	7
98	Hunting Shoes, (do.)	$7 00	10	19
99	Dog Collar. (do.)	$1 00	3	5
100	Worcester's Great Illus'd Dictionary	$10 00	15	28
101	Any Back Vol. Agriculturist	$2 30	5	9
102	Any Two Back Volumes do.	$4 60	8	14
103	Any Three do. do. do.	$6 90	10	18
	(Each additional volume at same rate)			
104	Twenty-two Vols. 16 to 37	$50 00	60	110
105	$10 Library (your choice.)	$10 00	15	28
106	$15 Library do.	$15 00	20	29
107	$20 Library do.	$20 00	26	48
108	A Choice of Good Books. (See Descript'n, p. 483.)			
109	An Excellent Watch	$10 00	16	30

Sent by mail, Postpaid, or ex. Bound.

☞ *The Premiums* **Nos. 4 to 8, 10 to 15, 17, 21, 22, 24, 26 to 29, 32, 33, 37 to 41, 48 to 51, 88, 89, 99, 101 to 108,** *inclusive, will each be delivered* **FREE** *of all charges, by mail or express (at the Post-office or express office nearest the recipient) to any place in the United States or Territories.—The other articles cost the recipient only the freight after leaving the manufactory of each, by any conveyance desired.*

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 456.

In justice to the majority of our subscribers, who have been readers for many years, articles and illustrations are seldom repeated, as those who desire information on a particular subject can cheaply obtain one or more of the back numbers containing what is wanted.

Back numbers of the "American Agriculturist," containing articles referred to in the "Basket" or elsewhere, can always be supplied and sent post-paid for 15 cts. each, or $1.50 per volume.

Deformed Ducks.—"R. P. McL.," Picton, N. S. When a duck is deformed in the wings, there is no method of cure. To prevent this, and similar deformities, breed only from perfect birds.

Bee-Stings Curing and Cured.—A recent "Medical and Surgical Reporter" states that a woman in Prague, who suffered greatly from gout, was persuaded to try bee-stings as a remedy; three bees were allowed to sting her arm in several places, and a cure soon followed. Another contributor, an M. D., and bee-keeper, says that when Tincture of Arnica was applied to bee-stings, "the relief was immediate and complete."

An Imperfect Teat.—"J. F. G." When two teats are grown together, it is probable that one duct is common to the two, in which case an operation, to separate them, would be unsuccessful. By inserting a probe in each teat, if there is but one duct, the probes will come together. If there are two milk ducts, the teats may be cut asunder by a skilled veterinary surgeon.

Sowing Rye in Corn.—"R. G. H.," Shusan, N. Y. We should not apprehend any detriment to the corn from sowing rye at the last hoeing. The rye would take hardly anything from the soil, and if the ground is rich enough the corn could stand it very well. As a general practice it is not to be approved, but for fall or early spring pasture, it is of great benefit at little cost.

Improved Plows.—"W. A. M.," Centreville, Ala. The most effective plow is one that turns the soil in the best manner with the least draft. The steel and the "Adamant" plows are claimed to do this, and, so far as we have tried them, they do it effectively. The harder and the smoother the surface of the mold-board, the less friction there is, and if the shape is right, the least draft.

Unhealthy Pear-Leaves.—"O. A.," Grange Co., O., sends leaves badly affected by a fungus—one of the "Cluster-cups"—which has appeared this year for the first time. Probably the same has existed before, but in such small numbers as not to be noticed, and the present season has been favorable to their development. All that can be done is to promote the general health of the trees.

Moss on Upland Pastures.—"S.," Mason, N. H. Moss upon dry grass lands may be easily destroyed by harrowing it thoroughly, sowing some fresh seed upon the new surface with a mixture of 100 lbs. of Peruvian guano or superphosphate of lime, and 100 lbs. of gypsum, per acre. Wet lands need draining.

Large Cows.—"J.," Hoquiam, W. T. It is difficult to raise rich butter cows of a large size. If it pays to breed large oxen for draft, it would be best to select good cows of large frame. Perhaps the Hereford cow, crossed with a Shorthorn bull of a milking family, would be the best combination to secure both butter and beef.

Why Wheat Lodges.—"C. D. B.," Rockland Co., N. Y. The stalks that grow rank and thick are succulent and weak, and when the tops are loaded with water, after heavy rains, they are easily laid flat by the wind, if not by their own weight. They have no power to raise themselves, and the crop is "lodged." In this condition the grain does not mature. This happens in soils that are rich in organic matter, and are deficient in lime. A liberal dressing of lime will remedy the defect. In sandy soils, the application of a few bushels of salt per acre has the same effect as lime upon clay soils. Thin sowing, as for instance only one bushel per acre, tends to cause a stiff growth of stalk, and prevent lodging.

The Steel-Plate Engraving for PREMIUM CLUBS.

Owing to the necessarily large expense of furnishing the Steel-Plate, it was at first intended to limit its offer to subscribers paying the full price of $1.50 a year, and a small addition, and where no other premiums were given. But we have finally decided to place all subscribers, as nearly as possible, upon equal footing, and we therefore make the following offers to all who are collecting lists of subscribers for Premiums:

Subscribers in Premium Clubs for 1879, according to the terms in the table on page 481, and in the General Illustrated Premium List, published in November, can each of them have the Steel-Plate Engraving, by adding only 20 cents for each name, to cover cost of packing, postage, etc., on the Engraving; Or only 13 cents each, when the Engravings are to be sent by Express, *unpaid*, in a single parcel, to one individual.

The Rapidly Increasing Circulation of the *German Agriculturist* affords us gratifying assurance, that its many improvements are being observed and appreciated. The splendid full-page engraving which now appears in every number, is richly worth the whole year's subscription price. Every German cultivator and laborer on the farm, or in the garden, should have the paper; while its varied household departments make the journal invaluable to every German home, either in the Old World or the New.

Attention Sportsmen, Farmers and others.—We invite all subscribers and others who may wish to make purchases of guns, revolvers, or any and everything in the sportsman's line to communicate with us. Our arrangements are now so complete for supplying such goods that we believe we are able to furnish them of a better quality and at cheaper rates than they can be procured generally through the country. Our elegantly illustrated Sportsman's Library Catalogue mailed on the receipt of two 3-cent P. O. stamps. Address, Sportsman's Department of the Orange Judd Company.

From Dark to Dawn, published by J. C. McCurdy & Co., Philadelphia. This is an elegantly bound, printed and illustrated work of 632 pages. The illustrations are full page steel engravings. The work is a second series of "Night Scenes in the Bible," by Rev. Daniel March. Written in an attractive style. This story of some of the notable incidents of sacred history will find a welcome in many homes. It has the endorsement of prominent divines for accuracy, purity of sentiment and high moral tone.

The Honey Locust.—"W. K. C.," Auckland, New Zealand. This makes a quick-growing and effective hedge, as it is very thorny. It is also called Three-thorned Acacia; botanically it is *Gleditschia triacanthos*. The seeds, if kept in the pods, germinate as readily as beans; but it is safer to scald before sowing those sold by seedsmen. Sow in rows wide enough apart to work among them, and keep free of weeds the first summer. In fall take up, assort in sizes, and heel-in until spring, then set at 18 to 24 inches apart, and treat the same as other deciduous hedges. White Thorn or Hawthorn is nearly abandoned for hedges in this country; the leaves appear late, drop early, become sun-burned, and are attractive to numerous insects. Honey Locust seeds will cost you about 50 cts. per lb., postage added.

Economical Good Cookery.—In the N.Y. Cooking School, Miss Juliet Corson teaches classes of various grades, from the children of the poor, to the daughters of the rich, and the lessons are varied to meet the needs of people in different circumstances. The aim in all, is to teach the pupils to *cook well*, and at the same time to cook economically. In her "Cooking School Text Book," Miss Corson gives the courses of instruction in her different classes. It is not to be inferred from the title, that it is a mere dry "Text Book;" the lessons are presented in the attractive form of bills of fare, arranged in a systematic manner. The articles required for each dish are first enumerated, the quantity of each article and its cost are stated. Then follow directions, giving the progressive steps in their proper order, very explicitly, but without needless repetition or cumbersome detail. As cooking schools are being established in various parts of the country, this has been prepared to meet the demand for a "Text Book," but it is not the less a most useful work for every household, and will commend itself to housekeepers generally by the excellence of the recipes and their economical character. A work like this, has a great advantage over the old style of "Cook Book," which is sometimes a jumble of tried and untried recipes from all sources, with the briefest possible directions, or a mere naming of the ingredients, and no directions other than "bake in a brisk oven," or something like it. Here, the recipes have been tried over and over again, and in teaching them to classes, all the difficulties that the unskilled are likely to meet with have been noted, and the directions framed to anticipate them. This work will be especially welcome to those who have assumed the cares of housekeeping, without having had previous experience—instances which occur more frequently than many suppose—as in the case of those whose lives before marriage have been devoted to teaching or other occupation. So far as any directions can supply the want of experience, those given here will do it. We may refer again to the plan of this work in our household columns. It concludes with a most useful appendix upon the principles of nutrition and the chemistry of food. Published by the Orange Judd Company; sent by mail for $1.25.

Specifications for Building.—Many a house costs vastly more than its owner expected, on account of "extras," which mainly occur because the items were not "down in the bond"—the specifications being faulty. To meet the want of full specifications—to include everything that is at all likely to enter into the construction of a frame-house, Messrs. Palliser, Palliser & Co., architects, of Bridgeport, Ct., and authors of "American Cottage Homes," have prepared and published a set which they find useful in their own practice, and are used by other architects also. These are intended for frame-houses, costing from $500 to $15,000, and appear to cover every possible item of masons', carpenters', plumbers', painters' and other work, all so arranged as to be readily filled up to meet each particular case. The full set of "Specifications" with two "Forms of Contract" are sent from this office; price, post-paid, 75 cents.

Change of Firm and Location.—The headquarters of the Robbins Family Washer are no longer at Naugatuck, Connecticut. The washer is now made by a new firm, the Bissell Manufacturing Co.; their office being at No. 42 Murray St., New York City.

The Eclectic Manufacturing Co., occupy rooms in the *American Agriculturist* building, at 245 Broadway, New York. They take the name "Eclectic," because they *elect* to manufacture anything they choose. Among their specialties are the "Empress Train Supporter" (not a railway train, but a dress-train), which is highly endorsed by no less an authority than Madame Demorest, and a safety pocket for the watch or porte-monnaie, which seems to be a practicable and valuable affair.

Gummed Household Labels.—Here is a brand new wrinkle. Messrs. Cornell & Shelton, of Birmingham, Conn., publish a book of labels for about everything that needs to be labeled in the household. These are in neat, clear type, and, being gummed on the back, are ready for immediate use. We once dined where soft soap was served for gravy, the saleratus-box having been mistaken for the salt-box—neither receptacle being marked. Everything of this kind should be labeled, and these books will be found most handy for the purpose.

New School Books.—"First Lessons in Arithmetic," by Wm. J. Milne; Jones Brothers & Co., Phila. An excellent idea: the child is taught to observe and to reason by the natural process of induction. Pictures embellish the book, and are made to teach the science of numbers. This is a most rational method. The second in the series is "Milne's Practical Arithmetic," written on the same inductive plan, which leads the student gradually on from simple principles to abstract calculations. We have at hand, also, a new "History of the United States," from the same publishers. It embraces the features of the well-known "Lyman's Historical Chart," and is written in a pleasing style, intended to make the pupil "love the inspiring story." All of these books are well printed and attractive in appearance.

Wire for Fencing.—"H. P.," Sparta, Ala. Wire fences have been extensively and successfully used; the usual size of wire is No. 9; the number of wires is 3, 4, or 5, as the case may require. Barbed wire is more effective than the common sort, but costs twice as much. Springs have been found effective in taking up the slack or in relieving the tension in changes of temperature. To make a fence proof against hogs, the wire must be placed 6 to 10 inches apart. The wire will last many years.

"The Youth's Companion."—If success is evidence of merit, the juvenile weekly with the above title, published by Perry, Mason & Co., Boston, should be of the highest order of merit, as its success is something wonderful—and when we say that it is deserved, we can give no higher praise. Parents can not be too careful in the kind of reading matter they provide for their children. Some of the journals published expressly for youth are of a pernicious character, and children had better not read at all than to pore over such trash. The "Youth's Companion" is always pure in its tone and elevating in its tendencies, and may be placed in the hands of children with safety.

Foot Power Saw.—"F. J. T.," Cannon Falls, Minn. A foot power saw may be used to cut cord wood, but a heavy fly wheel will be necessary to equalize the force. Such a saw will not cut so fast as a horse-power, but will be more effective than a buck-saw.

Poultry for Market.—It is of little use for persons at a distance to send poultry to the New York or any other market, unless it is prepared and put in the style that custom has established for the particular city. For the New York market, poultry must *never be drawn*, for most of the New England cities it is always drawn. Those who wish to learn how poultry must be prepared to bring the best price in the New York market, can obtain a circular giving full directions by sending to E. & O. Ward, No. 279 Washington St., N. Y. The Messrs. Ward are among our oldest commission houses, and their instructions for putting up poultry and all other produce, are the result of a long experience in the business.

Caponizing Poultry.—"A. B. T." Lewis' Practical Poultry book gives directions for making capons. Price, from this office, by mail, post-paid, $1.50.

Hay Tea for Pigs.—"B. G. L.," Cecil Co., Ind., writes that he has raised some thrifty young pigs upon hay tea in place of milk, which could not be spared for them. Boiled corn and house slops were given in addition.

Manure for Potatoes.—"G. S. E.," Mineola, L. I. We know of crops of 150 bushels of potatoes per acre, being produced on an application of 400 lbs. of the Stockbridge potato manure, and 300 and 400 bushels from larger amounts of the fertilizer. The parties dealing in the "Stockbridge Manures," are reliable. Some hold that better potatoes can be produced with such fertilizers than with barn-yard manure; but it depends quite as much on the soil and method of using, as on the manure; this is too much of a question for discussion here. Whether corn or potatoes would pay the best with good manure and cultivation, depends on seed, soil, and the farmer; then, other things being equal, there would probably be little difference in the ultimate results.

Medium-Sized Fowls.—As a rule, the medium-sized fowls of a breed are better than the very large ones, for laying or for table use. Quality and symmetry usually go together; that is, the bird possessing the shape and style of its breed in the highest degree, is the nearest perfect in other particulars, and is of medium size. In the Asiatic breeds of fowls, the specimen which stands a trifle above the average hight, is, in the majority of cases, the best in color, symmetry, and utility.

Plowing under Clover for Wheat.—"S. N. S.," Leadmine, W. Va. The beneficial effect of plowing in clover for wheat, is due to the mass of readily decomposable vegetable matter, rich in nitrogen, and which in decaying has an important chemical effect in the soil. The soil is not re-seeded by plowing in the crop. The first growth is cut, and the second crop plowed in, or both crops harvested and the stubble turned under; then re-seeded in the usual manner. It is a paying practice.

Red Swine in the West.—"C. S.," Sullivan Co., Ill. There are many red swine, commonly called "Jersey Red," or "Duroc" in Kentucky. There have been several large sales the past year, which probably distributed them in Illinois, Indiana and other Western States.

Shrinking of the Shoulder Muscles.—"J. O. M.," Sauk Center, Minn. When the shoulder muscles of a horse have shrunken greatly, the only relief is the use of a stimulating application, such as turpentine and alcohol, with one dram of tincture of Spanish-flies to the pint, or camphorated spirit; apply, either with brisk rubbing and kneading of the muscles, twice a day.

The "Ayrshire Record," Vol. II., published by the Ayrshire Breeder's Association, J. D. W. French, North Andover, Mass., Editor. This "Record" is distinct from the "N. A. Ayrshire Register," noticed in October, and differs from it in bearing the sanction of an association, while the other is a private enterprise. In this, there are two classes: animals tracing directly to importation, and those that can not be so traced, but which are thought to be pure blooded. The "N. A. A. R.," only admits to registry those animals tracing directly to importation. Of course, this complication causes some confusion to the uninitiated; but it seems only fair that valuable animals, supposed to be pure, should have such a place of registry as the "Ayrshire Record" provides, so long as proper care is exercised in the entries. The editor con-

gratulates the Association on its prosperity, and the increased interest in the breed. The price of this book is $3.00, and may be obtained of the editor, or of J. F. Brown, Providence, R. I., or at this office.

Is Plowing Injurious?—"A. M.," Centreville, Ala. Plowing is the only practical mechanical means we now possess for preparing the soil for crops. As a rule, the more the soil is plowed and worked, the more fertile it becomes. There need be no fear that exposing the soil to the sun by frequent plowing will injure it. On the contrary, soil is injured by being baked in the sun, when it lies unplowed and unworked.

Spayed Heifers.—"H. W. T." Heifers are usually spayed after having their first calf. Heifer calves are more difficult to operate upon than young bulls. It is necessary that the ovaries of the young animal be fully developed before the operation is performed.

Presidential Pork.—The D. M. Magie Co., Oxford, Ohio, sends us the porcine pedigrees pertaining to a pair of Presidential Poland pigs—at least we suppose we may call them "Presidential," as they have been purchased by President Hayes, and sent to his farm at Fremont, Ohio. The sow is "Oxford Princess," which shows that the President of a republic does not despise royal pork. But any monarchical tendency on this side of the pair is offset by the male, who is no prince at all, but merely "Rumler Boy," which is not even aristocratic. We are glad to see that the President has an eye to the future; when he lays aside the cares of office, if the climate will not allow him to enjoy "his own vine and fig-tree," he can have his own swine and piggery, and eat sausage that has a pedigree. Now that the Poland Chinas have the endorsement of the President, they would be holding up their heads if their necks were not so short, but what is more to the purpose, the D. M. Magie Co. write, in the same letter which informs us of this shipment to Fremont, that they had just shipped Poland Chinas to six different States. Singularly enough they think that their advertisement in the *American Agriculturist* is not wholly unconnected with this result.

Locality for Sheep Husbandry.—"M. S. G." Boston. There is perhaps no other locality better adapted for wool growing than that including South Western Texas, Western Kansas, and Southern Colorado; for the reasons that the climate is dry and healthful, pasture is cheap, and there will be but little expense for feed in the winter. The best sheep is the native ewes crossed with pure Merino, or other pure blood rams.

Disease of the Stifle.—"T. G." Gilman, Ill. The diseased condition known under the common name of "stifled," in a horse, is a weakness of the ligaments of the patella or knee-cap. The bone then slips out of place, and the horse is helpless. If it occurs once, it is almost certain to repeat itself when the animal slips or suddenly jerks the limb. If the bone is dislocated, it must be returned by drawing the leg backwards, and operating on the joint in a manner which can not be intelligently described. The services of a competent person should be secured for the service. If the ligament is only weak, or is strained, the joint should be bathed with cold water in which a little saltpetre has been dissolved, to remove heat. After this has been sufficiently done, a strong decoction of white oak bark should be applied to the part. Light exercise should be given, lest the muscles become shrunken for the want of use.

"The Dog—Its Management and Diseases." By John Woodroffe Hill. This is the reprint of an English work, on a subject that receives much more attention in England than with us. We had already examined the English work before the reprint came to our notice, and found it a very plain and sensible treatise. The diseases to which the dog is liable, are plainly described in popular language, and the treatment, which depends much more upon general care than much medicine, is clearly indicated.—Sent from this office.—English edition for $6.00. American Reprint for $2.00.

60 lbs. Carried 1,000 Miles for 6 Cents! Any farmer who has raised wheat knows how heavy a bushel of wheat *feels*, after he has carried it half a mile or so. We have found it a full day's work with a good span of horses, to take 30 to 40 bushels 14 miles to market, and return with an empty wagon. How would it be if we had no railroads or canals, to transport to the seaboard shipping markets the immense grain products of the West and Northwest? During July of this year, the average rate paid for carrying wheat all the way from Chicago to New York, by the Lakes (1.7c.) and canal (4.3c.) was only **six cents** per bushel of 60 lbs., and for a bushel of corn, 56 lbs., 5¼ cents! The distance by this route is some 1,500 miles. The Railroads, to compete with the water routes, have had to carry grain at about the same rates, and the shortest distance by railroad is nearly 1,000 miles. Allowing a team and driver only $4 a day for wages, feed, and other travelling expenses, carrying 40 bushels, and going 33⅓ miles each day, the expense would be $3 per bushel, providing that the team got loading enough homeward, to pay expenses and wages back. So, at the best, it would cost *fifty times* as much to carry grain to market by wagon, as it does by railroad. The same reckoning applies, in a lesser degree, to shorter distances. Shall we tear up the railway tracks, or abuse the owners, who do not receive 4 per cent, on the average, for the money invested? Ought we not rather to have a good deal of sympathy with the original builders of these roads, a large number of whom never got anything for the money expended—neither principal nor interest?—Not a very profitable business certainly.

Concrete Houses.—"J. R. D.," Ellsworth Co., Kas. Descriptions and plans of concrete houses were given in the *American Agriculturist* for December, 1874. The methods there described may be changed or modified to meet the demands of any special case.

The Use of the Ecraseur.—"E. B.," Jerseyville, Ill. The ecraseur is a very simple instrument. It consists of a chain loop, which is passed around the organ to be removed, and is then drawn up by a screw, so as to cut off the part by tearing. There is then little or no bleeding. It is simply a substitute for a knife in the operation of castration, and can be used in cases where the knife cannot. It was described in the *American Agriculturist* for Nov., 1874, which see for particulars.

The American Agriculturist Clubbed with Other Journals.

In response to numerous requests from our subscribers, relative to obtaining the *American Agriculturist* in connection with other publications, we have made arrangements with several of the leading Magazines, which will be forwarded in combination with our Journal as follows: [Postage additional when sent to foreign subscribers.]

American Agriculturist with	*Regular price for both.*	*The 2 supplied, postpaid, by us for*
Scribner's Monthly ($4.00)	$5.50	$4.75
Scribner's St. Nicholas ($3.00)	4.50	3.90
Demorest's Monthly ($3.00)	4.50	3.90
Harper's Monthly ($4.00)	5.50	4.75
Harper's Weekly ($4.00)	5.50	4.75
Harper's Bazaar ($4.00)	5.50	4.75
Appleton's Journal ($3.00)	4.50	3.90
Popular Science Monthly ($5.00)	6.50	5.50
Atlantic Monthly ($4.00)	5.50	4.75

On receipt of subscriptions as above, we shall forward the names and money to the offices of publication of the magazines ordered, and should there ever be occasion for complaints of non-receipt of such magazines, these should be made direct to their respective Publishers, and not to us.

Catalogues Received.

NURSERYMEN.

GEO. ACHELIS, Westchester, Pa.—Trade list of a large stock of fruit and ornamental trees, etc.

AUGUSTINE & Co., Normal, Ill.—General wholesale list, including root-grafts and trees in bud.

G. H. BANTA, Riverdale, Bergen Co., N. J.—A large wholesale and retail list.

BELLEVUE NURSERY Co., Paterson, N. J.—Wholesale list of pelargoniums and other florists' stock.

CHAS. BLACK & BRO., Hightstown, N. J.—Makes a specialty of peach-trees, but has a full stock of others.

BUSH & SON & MEISSNER, Bushberg, Jefferson Co., Mo.—Send their fall list of grape vines and small fruits. The immense list of grapes is classified in the same admirable manner that we have heretofore noted.

JOHN S. COLLINS, Moorestown, N. J.—One of the oldest small fruit nurseries, and has various novelties.

HARVEY CURTIS, Oswego, N. Y.—Marks down his stock at wholesale rates.

SAML. C. DECOU, Moorestown, N. J., has a general variety of small fruits, with several specialties.

GIBSON & BENNETT, Woodbury, N J., offers small fruits in general, including Felton's seedlings.

CHAS. A. GREEN, Clifton, Monroe Co., N. Y.—A list of small fruits, and a brief treatise on their culture.

A. HANCE & SON, Red Bank, N. J.—Send their wholesale and retail list for 1879, of a large and varied stock, with a number of specialties and novelties.

HEIKES' NURSERY Co., Dayton, Ohio—A wholesale list of fruit and ornamental trees.

D. E. HOXIE, Northampton, Mass., has a general list of small fruits.

JONES & SONS, Rochester, N. Y.—A wholesale list of fruit and ornamental stock.

MCBROOM & WOODWARD, London, Canada.—Catalogue of bulbs and dried flowers, etc.

THOMAS MEEHAN, Germantown, Pa., sends a special list of ornamental trees, and small stock for mailing.

SAM'L. MILLER, Sedalia, Mo.—A variety of small fr 'ts.

WILLIAM PARRY, Cinnaminson, Burlington Co., N. J.—New strawberries and raspberries, etc.

J. H. RICKETTS, Newburg, N. Y., offers two of his remarkable seedling grapes.

JOHN SAUL, Washington, D. C.—Sends his wholesale catalogue for '79, of fruit and ornamental trees.

SHINN & Co., Niles, Alameda Co., California.—A full list of fruit and ornamental trees, including many peculiarly adapted to the climate of the Pacific coast.

H. H. SMITH, West Haven, Conn., makes a specialty of the Crescent Strawberry, and has other proved sorts.

STORRS, HARRISON & Co., Painesville, Ohio.—Wholesale and retail lists for '79, of a large variety of fruit and ornamental trees, shrubs, etc.

JOHN VAN DOON, New Amsterdam, Wis.—Makes a specialty of small fruits at low prices.

LEO. WELTZ, Wilmington, Ohio.—General nursery stock, with a plate of the "Forest Rose" strawberry.

N. B. WHITE, Norwood, Mass.—New grapes and strawberries.

SEEDSMEN AND FLORISTS.

ROBERT BUIST, Philadelphia, Penn., sends a wholesale list of "well grown, clean, and properly named" greenhouse and stove plants.

HENRY A. DREER, Philadelphia, Penn., includes bulbs, seeds of the season, greenhouse and other plants, and horticultural appliances, all in one compact catalogue.

PETER HENDERSON & Co., No. 35 Cortlandt St., N. Y., have bulbs, seeds for fall sowing, plants for winter blooming, small fruits, and florists' requisites.

LEEDS & Co., Richmond, Ind.—A wholesale list of greenhouse plants, especially roses.

JOHN SAUL, Washington, D. C., sends a separate bulb catalogue—and very full it is.

STORRS, HARRISON & Co., Painesville, Ohio.—Special catalogue of bulbs and greenhouse stock.

FARM MACHINERY, IMPLEMENTS, ETC.

BLYMYER MANUFACTURING Co., Cincinnati, O., make everything in the way of sugar and sorghum machinery, steam engines, threshing machines; they publish a useful treatise on sorghum, its growth and manufacture.

BOOMER AND BOSCHERT PRESS Co., Syracuse, N. Y. Their lard and tallow presses are the subject of a special catalogue. This press is made on the same principle as their well-known cider press.

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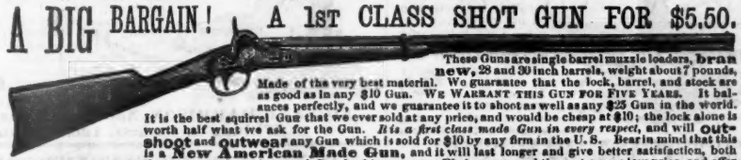

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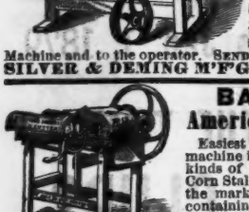

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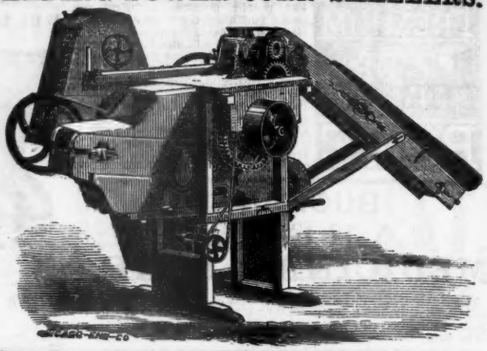

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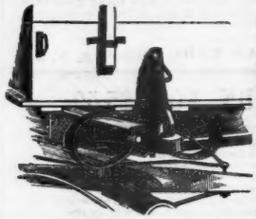

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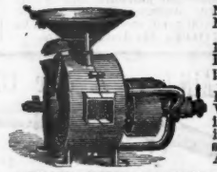

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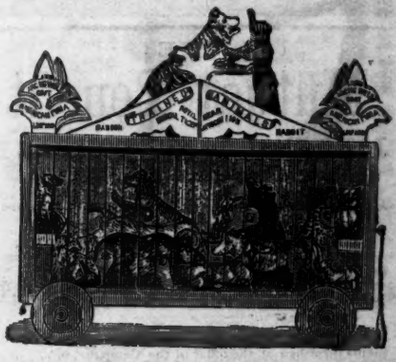

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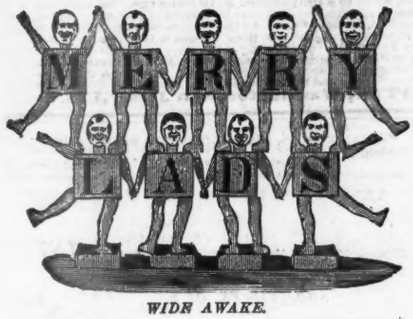

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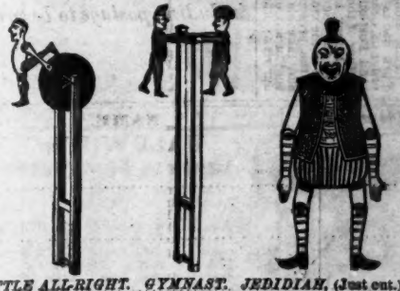

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